

# COMPUTERWORLD

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## Stock Exchange: GOING, GOING, GONE

\$35M in-house development effort fails;  
Reuters to the rescue with virtual trading

By Frank Hayes

After a four-year, \$35 million internal development fiasco, the Toronto Stock Exchange finally purchased the pieces it needs to launch a virtual trading floor.

Last week's deal with Reuters Information Services Ltd. to design trading workstations is part of the exchange's new plan to buy, instead of build, all its electronic trading floor.

"We're a stock exchange, not a software factory," said Brian Hardig, senior vice president of information systems and trading services

at the exchange. "Our floor-closure project has run into technical problems, and enough time has gone by that we can now buy the technology instead of building it ourselves."

Some brokers who deal with the exchange were more blunt: "It was a \$35 million fiasco," said Anne-Marie Stock Exchange, page 16

## Explorer beta gains ground on Navigator

By Kim S. Nash

Microsoft Corp. last week released a second beta version of its Internet Explorer World Wide Web browser that some users say closes in on the performance and functionality of Netscape's Navigator.

Surpassing Netscape Communications Corp.'s star power on the Internet will be tough, users and analysts said. Netscape dominates the browser arena, with market share estimated at 70% to 85%.

Still, the browser king may have been caught napping. Microsoft's Internet Explorer 3.0 Beta 2 is often faster at downloading Microsoft, page 16

### WHAT'S INSIDE

*Reviews in this issue:*

- OpenDoc should be considered by any developer who needs to create reusable components. See Software, page 54.
- New notebooks, although pricey, challenge desktop machines on virtually every front. See Servers & PCs, page 39.
- Four users tell why they like OpenServer 2.0. See Network, page 60.

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## NT 4.0 beats clock

Microsoft to ship ahead of schedule; users cite minor bugs

By Laura DiDio

Never known for getting its products out the door on time, Microsoft Corp. confirmed that it will formally unveil Windows NT 4.0 next Wednesday, a month earlier than expected.

Although users of the pre-release version said they haven't

encountered major flaws, some expressed concern that Microsoft may be shipping the product before addressing minor bugs and degeneration works.

Mike Nach, Microsoft's group product manager for Windows NT, confirmed the July 31 release date but emphatically denied that Microsoft would ship

NT 4.0 before getting all the bugs out. "We absolutely will not compromise the quality of NT 4.0," he said.

But users said current pre-release versions are still beset by several minor bugs and are missing key documentation.

Some analysts speculated that Microsoft was rushing NT 4.0 to beat Novell, Inc.'s next release NT 4.0, page 109

## Components turn up Web wattage



Black Diamond Consulting offers 3-D images that rotate give visitors a 360-degree view

By Sharon Gaudin

The World Wide Web could look dramatically different a year from now, as developers ramp up their use of software components to add animation, live-information feeds and interactivity.

The use of self-contained, reusable software chunks should supercharge the already-happy graphical Web, making a cruise through the Internet more like a ride through a CD-ROM game, developers and analysts said.

And the ride is picking up speed because companies can no longer differentiate them-  
Web sites, page 109

## 'net excess vexes IS



By Joseph Maglita

**M**any technologists know and dread Airline Magazine Syndrome. That's when a business executive reads about the latest wonder-widget in an inflight publication, returns to the office and de-

mands to know, "Why aren't we doing more with this?"

Bad news, IS. When it comes to the Internet and intranets, the syndrome is everywhere, from *BusinessWeek* to *Entertainment Tonight*. And it's causing pain to many technology groups. Hype headaches, page 82

**36%** of IS managers polled by Computerworld have diverted resources to Internet projects under management pressure.  
For complete results, see [www.computerworld.com](http://www.computerworld.com)

## Editor's Note

## Web worship

**T**here's an insidious new virus sweeping the computer industry, and I'm afraid I've caught it. It's Web Surfing Envy.

The major symptom of WSE is a growing, anxious conviction that everyone else is surfing more often and more competently than you are.

Our Computerworld editor has perfected a Web surfing routine that takes him to 10 critical, fascinating, professionally enriching sites in less than a half-hour. I stand in awe of this kind of efficiency. What discipline this demonstrates over the 25 million glistening sites on the Web, which are apparently going to get even more alluring in the next year (see Sharon Gaudin's story on page 1).

ComputerServe got hit last week by this very same bug. I would guess. All those subscribers who bailed out of the online service probably looked around and said, "Hey! Why am I hanging with these particular dweebs when all the cool people are surfing the Web?" Point click — we're gone.

Another symptom of the WSE virus is memory loss. I keep forgetting the different passwords I made up to register at all those fascinating sites. *The New York Times* online still sends me plaintive questions about why I never confirmed my registration password, which naturally I forgot. This is probably why so many people in cyberspace use aliases. WSE can lead to professional embarrassment.

Another telltale symptom: general crankiness with your IS department about network speed and bandwidth. It's no small wonder there's a backlash against Internet hype building among IS professionals, as our stories (pages 1 and 12) point out this week.

Once your senior business managers get WSE, there's no reasoning with them. But as one IS manager lamented, "You find out how much work it is to keep a Web page updated and get yourself. Here we issued a better dog license thanks to the 'net."

Once the media hype finally sizzles down, what will happen to all those execs cured of Web Surfing Envy? As one of your IS brethren puts it, "Our 15 minutes of fame will be followed by three years of darkness."

Maryfran Johnson, Executive editor  
Internet, [www.computerworld.com](http://www.computerworld.com)

## The 5th Wave by Rich Tennant



## Sybase cleans house

By Dan Rechman

Sybase, Inc. last week took a series of dramatic steps to reverse its ailing fortunes. The company appointed a new CEO, cut its workforce by 10% and eliminated four products.

Mitchell E. Kertzman was promoted to president and CEO, and co-founder and former CEO Mark B. Hoffman became chairman of the board.

Kertzman, former CEO of Powersoft Corp., a subsidiary of Sybase, is now responsible for formulating strategy and running the company.

The changes followed Sybase's \$6.9 million loss, for the quarter ended June 30.

Kertzman said

Sybase will focus on

"core products."

"We invested

distribu-

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now

we

need

to take

respon-

sibility

to reduce

its complexity

and cost.

We still believe in it

passionately," he said.

Users reacted positively. "Mark



Mark Hoffman is out as

Sybase CEO

Hoffman is a very good guy, but he's not a marketer," said Cory Isaacson, president of CompuFlex International, Inc., an investment and consultancy in Chatworth, Calif.

"And Kertzman is a dry-as-the-dust, gregarious marketing guy I think it's a great move."

Sybase cut about 600 and 700 employees from its staff, reducing its head count by about 10%. And it cut four minor product lines.

## News Shorts

## Gupta settles books

Gupta Corp., in Menlo Park, Calif., last week said it will spend \$15 million to help settle a shareholder class action lawsuit over financial statements the company made in 1993 and 1994. Disagreements over those statements cost the company its auditor, Arthur Andersen LLP, last October. Gupta's new auditor, Price Waterhouse, has given the Gupta's books a clean bill of health — but that bill includes a \$44 million loss for last year.

## OptiPlex price drops

Dell Computer Corp., in Austin, Texas, last week dropped the price of its OptiPlex line of corporate PCs by up to 14%, making it the third time since January that the company has lowered the line's prices.

## Lotus migration tools

Lotus Development Corp. is shipping migration tools to help its CC-Mail users move to Notes. The tools are free at Lotus' World Wide Web site ([www.lotus.com](http://www.lotus.com)). Administrators can use the tools to move directories, messages, attachments, mailing lists and folders to the Notes server and convert CC-Mail bulletin boards to Notes databases.

## Sun ships Internet pack

Sun Microsystems, Inc. last week made the Internet Access PlusPack available at its World Wide Web site ([www.sun.com](http://www.sun.com)). The pack is a suite of software for chatting, browsing, accessing au-

dio and video and otherwise using the 'net. The \$99 bundle runs only on Sun's Solaris and includes software for running Java applets.

## Point, click, ship

FedEx Corp., in Memphis, has released InterShip software designed to let FedEx customers arrange to send packages via the delivery company's World Wide Web site ([www.fedex.com](http://www.fedex.com)). Users can fill in shipping parameters, generate a package tracking number and schedule a driver pickup.

## C/NET sells Web app

C/NET, Inc. The Computer News today will announce that it has sold the Pinger server software it uses to run its site, including the online computer industry newspaper ([www.cnet.com](http://www.cnet.com)). The new owner, Vignette Corp. in Austin, Texas, plans to include the software in its World Wide Web management suite, which will be released in October.

## Microsoft posts code

Microsoft Corp. will put binary and source reference implementations of the scripting engines for Visual Basic, Script and JScript on its World Wide Web site ([www.microsoft.com](http://www.microsoft.com)). The reference material can be downloaded for free a few weeks after Internet Explorer's official release, which is expected next month.

## Novell, McGill ink deal

Novell, Inc. and McGill Systems are scheduled to announce a deal to integrate

McGill's HostExplorer terminal emulation technology with Novell's LAN WorkPlace Pro for Windows 95 and Windows NT. The technology will give Workplace Pro users access to Unix servers and workstations and IBM-compatible mainframes.

## McAfee adds apps

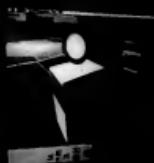
McAfee Associates, Inc. last week acquired a 32-bit remote windowing technology for Windows NT and Windows 95. The software lets application administrators remotely administer 32-bit Windows NT and Windows 95 systems.

## Process names CEO

Process Software Corp., has appointed Dean Goosdenre to replace company founder Phil Denzer as president and CEO. Goosdenre previously was president of PSDI, Inc., an asset management software maker he helped take public last year. Denzer will remain as chairman.

**SHORT TAKES** IBM this week will announce long-delayed RS/6000 multiprocessors based on the PowerPC 604 chip, as expected [CW, July 8]. ... **Boole & Babbage, Inc.** and IBM last week announced a \$10 million pact to extend an agreement that would let IBM continue to use Boole's systems management technology in its CICSplex System Manager product through March 1999.

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# New CA- Unicenter TNG

July 22, 1996

**News****NEWS****64-bit: Who'll bite?**

Users are expected to wait years before making a widespread transition to 64-bit applications.

**New service levels**

Network managers can now choose a happy medium between T1 and T3 service levels.

**Year 2000 in the sky**

Before year 2000 hits, a timing change problem might strike satellite systems.

**Help wanted**

A few good CIOs are hard to find, Uncle Sam learns.

**Taking a Web 'time-out'**

Users aren't as enamored with the Internet as Wall Street is.

**R/3 outsourcing**

Analysts foresee a booming business for R/3 outsourcers.

**Eschewing Exchange's groupware**

Users are overlooking the groupware features in Microsoft's Exchange Server in favor of E-mail.

**Lawson's new software**

Lawson Software this week will announce a major release of Internet-ready financial and human resources software.

**OPINION****Web servers, Part 1...**

Microsoft's not dead in the Internet waters quite yet, Paul Gillin says.

**...and Part 2**

IS managers have decided it's a two-horse race for Web server supremacy, says research guru David C. Moscala.

**This week in****COMPUTERWORLD**

**QuickPoll:**  
Is Apple on its way back?  
Weigh in online, and see what your peers think in this week's survey.  
[www.computerworld.com](http://www.computerworld.com)

**Choice Cuts**

**Master of your destiny:**  
An advanced college degree  
could be the key to moving  
your career further, faster.  
See Careers, page 86.

**Doing their own thing:** Thinking of starting  
your own company? Three former IS pros  
share their entrepreneurial experiences.  
See Managing, Page 77

**Technical Sections****SERVERS & PCS****Hard-to-forgetten**

Forget network storage — hard disk sales are rising quickly.

**Notebook reviews**

Although they're pricey, three new notebooks challenge desktop machines in almost every category.

**SOFTWARE****Batching it**

A pact between IBM and BMC Software may make processing mainframe batch jobs quicker.

**OpenDoc review**

Developers who need to write reusable components should check out OpenDoc.

**THE ENTERPRISE NETWORK****Interoperable tools**

A pending standard promises to make proprietary network

management tools interoperable.

**Review: OS/2 Warp Server**

Four users say why they like it.

**THE INTERNET****Monitoring the 'net**

Internet monitoring tools prompt webmasters more control.

**Is collapse imminent?**

Predictions of Internet collapse shouldn't be ignored, Charles Babcock says.

**CORPORATE STRATEGIES****No ticket, no waiting**

American and other airlines are big on systems that support ticketless travel.

**Pentagon tool**

The Pentagon's analysis tool is finding civilian and commercial users.

**Features****MANAGING****Entrepreneurs**

IS pros who strike out on their own.

**IN DEPTH****Internet hype**

Great expectations put the squeeze on IS.

**CAREERS****Moving ahead by degree**

An advanced degree is good for your career.

**MARKETPLACE****Network design**

There's a new generation of network design tools.

**FINANCIALS****The 'net effect**

How do you evaluate an Internet IPO?

**COMPUTERWORLD**  
wins in the Computing Trade category  
for its Aug. 26, 1996, coverage of the  
Windows 95 launch.

**Folio:**

1996 Annual Editorial  
Excellence Awards

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# Users in no hurry for 64-bit system migration

By Craig Stedman

**U**nix vendors keep talking that 64-bit talk. But it will likely be years before most users feel the need to walk the talk.

Keeping the patter going is Hewlett-Packard Co., which today will detail plans for adding 64-bit capabilities to its HP-UX operating system by the middle of next year. IBM will follow suit next week with a road map for upgrading its AIX software to 64-bit status by late next year.

The promise of 64-bit operating systems lies in further speed improvements, increased application scaling, and flexibility because of added support for larger memory capacities and file sizes. That is especially attractive to very large database users.

The leading Unix vendors — HP, IBM and Sun Microsystems, Inc., which already sold out a 64-bit transition plan earlier this year — are being pushed into action by Digital Equipment Corp.'s success at the high end with its 64-bit

TurboLaser systems. Other than IBM, the major Unix vendors ship 64-bit hardware, which should boost performance even if it only runs 32-bit applications. But only Digital and Silicon Graphics, Inc., ship complete 64-bit systems at this time.

David Poole, director of enterprise servers at Digital, said about 30% of the 2,000 high-end TurboLaser systems that it sold in the past 15 months had enough memory to take advantage of the 64-bit capabilities. Digital expected the

## Support will come bit by bit

**E**volution, not revolution.

That's the spin HP and IBM are expected to put on their 64-bit makeover plans for their Unix operating systems.

HP will support larger file sizes in an HP-UX release due in August. The company will follow in the middle of next year with a full 64-bit implementation to be called HP-UX 11. Users will be able to run their 32-bit applications on HP-UX 11 without having to recompile code, HP officials said.

In 1998 or later, HP will switch to a merged Unix that it

is codenveloping with SCO, Inc. Dan Beringer, HP-UX product manager, said HP is "being deliberately fatter at that end of the spectrum" because it has to wait for Intel Corp. to ship its promised Merced chip. That chip will replace the PA-RISC processors now used in HP's workstations and servers.

IBM is expected next week to announce plans for reaching full 64-bit status with its AIX software in the second half of next year. It also has promised to ship 64-bit Unix hardware in the second half. IBM and Sun

— like HP — are inching toward 64-bit support by enabling their operating systems to handle larger files.

But users have to do special coding to take advantage of that, and existing applications need to be modified to work with the larger files in a 32-bit environment, said Greg Weiss, an analyst at D.H. Brown Associates.

"Most [customers] will probably just wait until the full 64-bit operating systems come out," Weiss said.

— Craig Stedman

- Support for more memory and larger files and file systems than 32-bit operating systems
- Flat address space for building databases without tiered indexes

### Typical applications for 64-bit operating systems

- Large data warehouses with complex querying and analysis capabilities
- Enterprise applications with many thousands of users
- World Wide Web search engines and other multimedia uses
- Technical computing that involves large simulations

figure to be closer to 10%, he said. "It's just starting to trickle in everywhere," Poole said.

But despite Digital's gains and the resounding flurry of vendor activity, some users and analysts maintain that filtering 64-bit technology into the mainstream will be a long process.

### Long latency

George Weiss, an analyst at Gartner Group, Inc., in Stamford, Conn., predicted a gestation period of up to five years for Unix systems and even longer for Windows NT, which is expected to eat away at low-end and midrange Unix sales.

David Persaud, head of computer science research at DuPont Co. in Wilmington, Del., said he can use increased file sizes that IBM and Sun will support as the first step on their 64-bit road maps.

But other than that, 32-bit sys-

tems should meet his needs for another two to three years, he said. "We just haven't found them to be a significant constraint yet."

"In a very limited subset of our applications, 64-bit [software] could help," said Don Baune, manager of computer operations at the University of Utah's radiology department in Salt Lake City. Medical images that the radiology department runs on Sun servers still eventually hit the limits of 32-bit technology, according to Baune.

But Sun's plan to turn Solaris into a 64-bit operating system within 18 months "is ahead of where we really would need it," Baune said. "And I'm not really sure how much of an impact it's going to have on our day-to-day operations."

▪ X Windows vendors are adopting Web browsers. See page 49.

# Web targeted to unify management

By Patrick Dryden

**K**ey desktop and network vendors last week proposed a standard that could unify management of diverse client/server components via the World Wide Web.

Hyperlinked administrators could someday avoid having to sit among several different network, system and application tools by using a middleware standard dubbed Web-Based Enterprise Management (WBEM).

This is the issue pitched by BMC Software, Inc., Cisco Systems, Inc., Compaq Computer Corp., Intel Corp. and Microsoft Corp. Initial backers include Bechtel & Flaherty, Inc., Cobalt Systems, Inc., Dell Computer Corp. and Synapse Corp.

"This could be the glue that will unite all the diverse management standards into one universal ap-

proach," said John Feldensier, vice president at network monitoring vendor Technically Elite, Inc. in Costa Mesa, Calif.

"We'd like to find a way to pull all our tools together on one platform, and the Internet is the place to do it," added Morris Ellingson, leader of the network management engineering group at Arizona Public Service Co. in Phoenix.

But users expressed some skepticism because so many vendors' standards organizations are involved. Also, similar efforts to unify management objects have been heralded, then buried.

"So far this is just a lot of talk. I wouldn't tell anyone to hold off pursuing other solutions," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

The success of the venture hinges on how well WBEM can be

made to work with the wealth of existing Simple Network Management Protocol (SNMP) devices, said Jeff Case, one of SNMP's creators and president of SNMP Research International, Inc. in

Knockville, Tenn.

Adaptation is possible, but not easy. "As we say down on the farm, you can make a mouse play the piano if you apply enough voltage," Case said.

## Ambitious acronyms

**W**BEM is a standards effort that seeks to let administrators use any Web browser to manage networks, systems and applications.

The goal: Define a midlevel manager so that browsers and applets can rely on the Web's Hypertext Transfer Protocol (HTTP) to reach existing management protocols.

Those mechanisms include SNMP used by networking gear and the Desktop Management Interface used by new PCs and servers.

Two midlevel management technologies are

proposed to adopt these established standards to Web access. HyperMedia Management Schema (HMMS) is a set of data structures designed to categorize and show associations among manageable objects throughout a network. HyperMedia Management Protocol (HMMP) links that schema to run over HTTP.

HMMS will be controlled as an open standard by the Desktop Management Task Force, with HMMP guided by the Internet Engineering Task Force.

— Patrick Dryden

# Cisco bridges gap in ATM service offerings

By Kim Girard

**Cisco Systems, Inc.** has become the first vendor to offer Asynchronous Transfer Mode (ATM) as a cost-effective middle ground between T1 and T3 levels of service.

Cisco, which recently bought StrataCom, Inc., today unveiled a module for the StrataCom BPX/AXIS wide-area ATM switch. It links multiple T1 lines in one pipe, a technique called inverse multiplexing.

The offering is an attempt to bridge the gulf between T1 speeds of 1.544 Mbit/sec. and T3 speeds of 45M bit/sec. The Cisco module will give carriers, corporations and Internet service providers access to ATM at speeds ranging from 1.5M to 16M bit/sec.

## Cisco's strategy for inverse multiplexing for ATM

- Modules for the StrataCom BPX/AXIS wide-area switches for ATM. Price: \$8,000.
- 8-port T1 service module for the AXIS switch. Pricing starts at \$24,000, with the cost of ATM inverse multiplexing set at \$3,000 per port.
- Inverse multiplexing for ATM capabilities will be added to Cisco Lightstream 1010 campus ATM switches and Cisco 7000 family routers.

"It certainly could be a good interim solution," said ATM user Chuck Rush, global network architect at Chicago-based McDonalds, Inc. "Until the carriers finalize their offerings, multiple T1s will provide relief to bandwidth drought. The downside to this is that the user must manage the services instead of the carrier."

## Cheaper than T3

The offering could mean a "bigger bang for the buck" for smaller and remote sites where using ATM inverse multiplexing for bringing traffic to the main site would be much cheaper than upgrading to T3, said Steve Fall, ATM project manager at Computer Science Corp., which contracts with NASA for wide-area ATM equipment.

The need for bandwidth higher than T1 speed is growing, but only about 1% of ATM users require T3s, according to Jennifer Fuer, vice president of data communications at the Yankee Group in Boston. T3 can be eight times as

expensive as T1, she said.

Cisco, in San Jose, Calif., has developed an eight-port module that will support ATM inverse multiplexing on the customer end for \$1,000 per port. Once the ATM forum approves the inverse multiplexing specification, Cisco said it will upgrade cus-

tomer software for free.

"I was a little reluctant to think we'd be buying a non-standard solution," Fall said. "Now they're stating they'll make it a software upgrade — that makes it a lot more attractive from my standpoint."

The modules developed by StrataCom

have already been shipped to LDDS World Communications to AT&T Corp. are expected to follow.

Cisco also plans to fold inverse multiplexing capabilities into its Lightstream 1010 campus ATM switch and Cisco 7000 routers.



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# Year 2000 syndrome strikes again

By Stewart Deck

A story used to circulate among Navy fighter pilots regarding their planes' Global Positioning System (GPS) navigation systems. It was rumored that if a pilot crossed the equator in a plane outfitted with a GPS device — ka-whoosh! — the plane would flip upside down.

Top Gun theorists aside, the GPS system doesn't exactly work that way, but an upcoming satellite timing change could throw those navigation systems for a loop.

It sounds a bit like a year 2000 problem, but this one will reveal itself 12 days before the end of the millennium, on Aug. 22, 1999.

The GPS system is a time-based network of 24 satellites in synchronized orbit. Each satellite constantly transmits time-tagged

data bits over broadcast radio frequencies to tell where it is at precisely what time.

On Earth, GPS receivers listen to four or more satellites at once and compute the time intervals between when signals were sent and when they were received to calculate the exact distance between the satellites and the receiver. That lets each receiver tell us exact latitude and longitude coordinates.

Who needs to know latitude and longitude? A lot of people, actually. Trucking firms, including Craig Logistics in Perryburg, Ohio, and United Truck Lines in Eagle Grove, Iowa, use GPS systems to keep fleets of trucks on the road. Rental car companies Avis, Inc. and the Hertz Corp. have outfitted vehicles with GPS devices that tell drivers how to

navigate in cities across the U.S.

Although he hadn't heard of the problem, Will Strauss, president of Forward Concepts, a market research firm in Tempe, Ariz., said that if it is true, something

of this import would have effects far beyond what people know of GPS receivers today.

The satellite timing mechanism isn't your everyday clock. It measures time in one-second blocks of seconds. Instead of "Monday morning, 9 a.m.," it will say, "Week X, 118,950 seconds."

## How GPS works

- 1 Each GPS satellite has an atomic clock that continuously broadcasts the time and its position.
- 2 On Earth, a GPS receiver listens to four or more satellites at once.
- 3 The receiver computes the time intervals between when signals were sent and when they were received.
- 4 The receiver calculates the exact distance between the satellites and the receiver.
- 5 The receiver tells the user its exact latitude and longitude.

The possible wrench in the works is in that pesky Week X.

The satellites were right that Week I was Week 1, 1980. Unfortunately, their clocks could only hold 1,004 weeks of time measurements of the year field, so they will all roll back to Week 1 on Aug. 22, 1999. On that date, the satellites will begin transmitting time data as Week 1. What should be August and September 1999 could look like January 1990 to an unknowing receiver.

## Correcting the problem

According to John Varrus, vice president of software at Magellan Systems Corp., a manufacturer of recreational GPS receivers, this could throw some receivers "way, way off" and give bizarre location readings.

Varrus said most GPS receiver makers are aware of the problem and have taken steps to correct it.

Each Magellan receiver, for instance, has an index of manufacture encoded in its software. When the satellites tell a receiver it is 1980, the receiver will self-adjust to the correct year.

Herz isn't concerned at this point, either. In October, the company will roll out 8,000 souped-up rental cars with Never-Lost GPS navigation systems built by Rockwell International Corp. "Our customers love it, and we believe this is the technology of the future," said Lauren Kelly, public affairs manager at the Park Ridge, N.J., company.

Hopefully, they will still live it in August 1999.

Robert Scheir, senior editor, management, contributed to this story.

 The Pentagon goes public with its re-engineering tools. See page 72.

## IBM mounts attack against HP 3000

Will offer trade-in deals, access to third-party experts

By Jaikumar Vijayan  
and Michael Goldberg

IBM is aiming a pitch at the heart of Hewlett-Packard Co.'s HP 3000 community.

Bolstered by what it perceives as growing unease among HP 3000 users over the future of their investments, IBM this week will launch a marketing campaign aimed at luring users and software developers into the AS/400 fold.

IBM's effort will include a mailing to about 2,000 HP users, invitations to teleconferences and migration strategy sessions with third-party experts and trade-in deals, said Tony Madlens, an IBM AS/400 technology executive.

Analysts said they are seriously divided on whether the migration will trigger mass defections. But the IBM effort, which will come two weeks before the HP World user show in Anaheim, Calif., underscored the industry perception that HP needs to pay more attention to its long-time HP 3000 customers.

The HP 3000 is one of HP's oldest and most popular midrange computers. Recently, however, some users expressed concern over what they consider to be HP's ambivalence toward continued application and operating system support [CW, April 22].

"The HP 3000 is something of a cult product. But time has passed,

### White AS/400 claims the AS/400 is a good alternative to the HP 3000 ...

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- Has 25,000 applications – all Internet enabled
- Supports Windows, OS/2, Unix and Macintosh clients
- **AS/400 says it is better to stay with the HP 3000**
- HP will continue to meet application needs of its installed base as long as there is user demand
- HP will continue to provide operating systems and hardware enhancements, including 64 bit support
- HP will support increasing interoperability between Windows NT, Unix and other HP platforms

and that community has been semi-abandoned by HP," said Dave Andrews, managing partner, a consulting firm in Cheshire, Conn. "HP [is] focusing their attention on Unix," he said.

However, IBM's alternative, the AS/400 — also a proprietary system — with 1970s minicomputer roots — features some of the same ease-of-use strengths for business system administrators, Andrews said.

Sat Mayil, director of information systems at CMS Gilbert Packaging Systems in Treswicke, Pa., said his company converted to the AS/400 two years ago. "We felt that HP support for us was

very negligible" in terms of application availability for the HP 3000, he said.

The HP 3000 "is damn good hardware, but we just didn't have enough software or programmers to keep up with it," said Norio Nishiguchi, IS director of Cameron County in Brownsville, Texas.

The county, which started migrating applications of a HP 3000 to AS/400 about three years ago, now buys third-party applications it needs instead of having to develop them in-house like it used to.

"Still, mass migrations to IBM are extremely unlikely," said Ron Seydel, editor of "The 3000 NewsWire," a newsletter based in Austin, Texas.

## Microsoft offers Visual J++ beta

By Justin Hibbard

Microsoft Corp. last week began distributing via its World Wide Web site a free beta-test version of Visual J++, a Java development tool aimed largely at Visual C++ developers who stray into the Java camp.

Formerly code-named Jakarta, the product sports the same interface as Microsoft's Visual C++ development tool. That gives Visual C++ users a smooth migration path to Java programming while keeping them in the Microsoft fold.

Beta testers familiar with Visual C++ will find the J++ environment like home.

"We had been using C++, on it was an easy shift to using J++ since it has that similar feel," said Scott Milner, a developer at Bulletproof Corp., a software firm in San Jose, Calif. "The compiler is quite fast. I say it's five to 10 times faster than other environ-

ments that we've been using to compile Java."

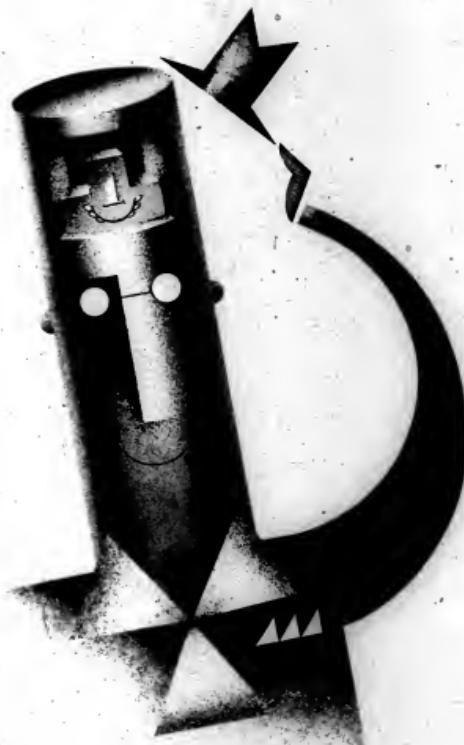
A speedy compiler is just what most Java tool kits lack, other users said. "We've taken a look at [Sun Microsystems' Inc.] Java Workshop," said Sam Pendleton, a senior developer at Cadis, Inc. in Boulder, Colo. "The biggest thing that we noticed about it was that it was slow."

Not surprisingly, most beta testers for Visual J++ were commercial software developers, not corporate information systems developers. So far, few IS departments have experimented with Java. But Visual J++ may change that, said David Kelly, an analyst at Hurwitz Group, Inc. in Newton, Mass.

Kelly predicted that J++ will bring Java into many IS shops for the first time. But he said most corporate developers will discover that the language isn't the panacea they have heard about. "Java is just another language," he said.

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# Job hunting? Government seeks CIOs

By Gary H. Anthes  
WASHINGTON

Within a little more than two weeks, 22 federal agencies, by law, must appoint chief information officers. But most won't meet that deadline, and observers say it will be

months before the government has qualified CIOs onboard — if ever.

Bureaucratic inertia is partly to blame, but the real stumbling block is low government pay scales, according to government and industry officials.

"It's a million-dollar, General Motors CIO

type of job," said Hank Philcox of his former post as CIO at the Internal Revenue Service.

The government CIOs will be paid \$115,600 per year, or a third to a fifth of what their counterparts in industry earn.

"The pay, plus the difficulty of a job of



**The GSA's Joe Thompson: Most agency CIOs lack qualifications**

that type, plus all the political stuff you have to put up with, is not attractive to the private sector," said Philcox, who for the past year has been CIO at DynCorp in Reston, Va.

Only a few agencies, including the U.S. General Services Administration (GSA) and the departments of State and Defense, have appointed CIOs as mandated by the 1996 Information Technology Management Reform Act. The act, which takes effect Aug. 8, aims to make agencies more accountable for, and effective in, their \$25 billion annual information systems activities.

A few other agencies, such as the IRS and NASA, have permanent or interim CIOs. But most lack the qualifications specified in the law, said Joe Thompson, CIO at the GSA. He predicted it would be next year before a cadre of CIOs is in place.

President Clinton last week created a CIO Council charged with recommending federal IS management policy, procedures and standards; sharing ideas to improve IS management; and improving the hiring and training of IS managers.

#### **It won't be easy**

"We think it will be difficult to recruit the CIOs," conceded Renato DiPentima, chairman of the CIO Task Force of the Industry Advisory Council (IAC), which advises the government on information technology issues.

Qualifications will be a problem. A report by the IAC defined the ideal candidate as "a somewhat rare creature: a politically astute, bureaucratically maze-bright, business-oriented individual."

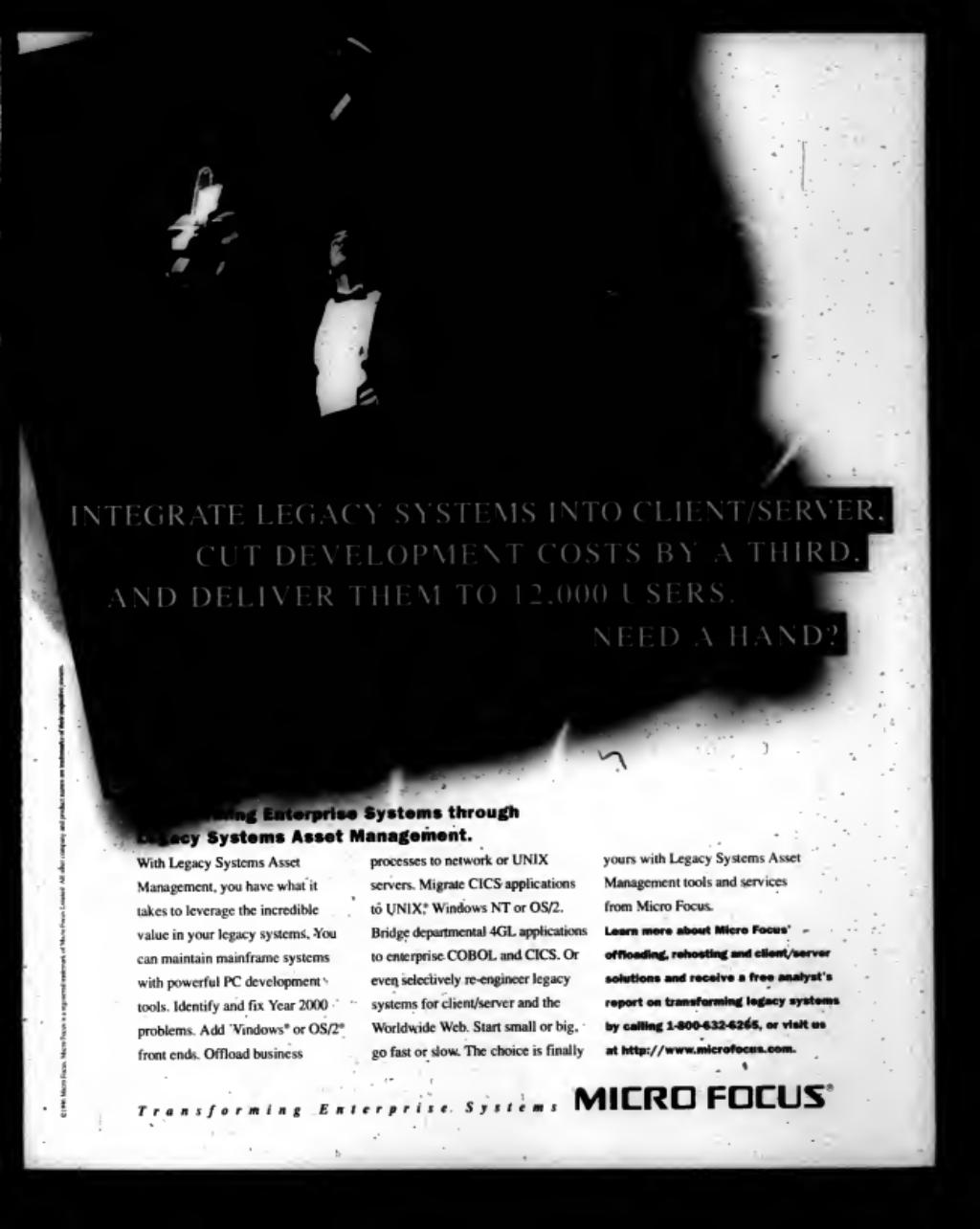
But sponsors of the government CIO concept predicted they will find civic-minded people willing to take big pay cuts for the opportunity to serve the public.

Indeed, such people do exist. Veteran CIO Laraine Rodgers, now a private consultant, took a 50% cut in salary when she moved from a senior IS management position at Citibank to become CIO of the city of Phoenix in 1991. "It was a wonderful opportunity to really make a difference and to learn, I loved it," she said.

Some have questioned whether the CIOs will improve things and point out that six years after major agencies created the post of chief financial officer, many are still unable to produce reliable financial statements [CW, June 17].

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# Users are strolling on to Web

By Tim Ouellette and  
Randy Weston

As Wall Street last week cooled its love affair with the Internet by walloping inflated technology stocks, users said they aren't surprised by the reality check.

Despite the relentless hype (see story, page 1) and fast pace of change on the Internet, many users have been slow to apply World Wide Web technology to business.

"I'm not that enamored with [the Web]," said Ira Leiser, MIS director for Pinellas County in Clearwater, Fla. "You find out how much work it is to keep a Web page updated and ask yourself, 'Have we issued a better dog license thanks to the Internet?'

Leiser has a point. TeleChoice, Inc., a consultant in Verona, N.J., estimates that firms can spend between \$50,000 and \$2 million to create and maintain a Web site, another \$450,000 just to keep a midsize Web site updated.

That can be just the tip of the

iceberg. V. L. Shiva, president of Web page developer Millennium Productions, Inc., said his Cambridge, Mass., firm has seen no increase in clients who weren't happy with their first stab at a Web site but are giving it another go because they know it is a necessity.

It isn't just the site that has to be updated. Rich Jarosky, managing editor at *The Wall Street Journal's Interactive Edition*, said his business model also is highly subject to change.

"We're trying out to adopt a bunch of new technologies until we've sure a large number of our readers actually want them," he said, referring to plug-in video clips and other special graphics effects.

#### Join the crowd

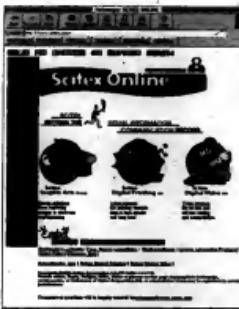
Many more companies realize they need an Internet presence to keep up with the Joneses.

"Tim is in the process now of saying, 'All right, fine, I may have to do something out here.' But I'm

doing it very slowly," said John L. Thomas, vice president of information technology at Market Knowledge, Inc., in Lombard, Ill.

"We're definitely stepping back now and saying, 'How can we fit this [Web technology] into our business plan, specifically job matching,'" said Mini Garrity Deeman, vice president of marketing at Adia Personnel Services, Inc. "And when it comes to business applications, we wanted to take it slow and steady."

That might not be the best news for Web developers. Especially because the cause of the Web software firms hit hard by the Wall Street sell-off probably won't bounce back quickly — particularly smaller firms, which depend on that money to develop products, said Mc-



Companies such as Sciex rely on software from tried-and-true firms like Oracle for their Web development

chael Murphy, editor of the "California Technology Stock Letter."

But users can depend on more established firms that are still per-

forming in the market.

"We're an Oracle shop. Oracle doesn't have the latest and greatest Web technology, but they have what we need right now, and we're pretty sure they're going to be around in the future," said Ethan Simmon, operations manager at Sciex, in Bedford, Mass.

And users are generally positive about Web-based technology and its potential to help their businesses.

"I'm very optimistic" about the future of the Internet, Deeman said. "If we didn't have a Web site, [clients] wouldn't have paid attention to us. Trying to keep up with the technology is a challenge, but you have to do it ... if you are to succeed in the future, you have to be committed to supporting the Internet."

## Oracle's database plan for 'net may not suit everyone

By Dan Richman

SAFRAZIANO

Oracle Corp.'s approach to intranets and the Internet might be right for some types of businesses but not for sites that aren't heavily database-oriented, analysts said last week.

The Redwood City, Calif., vendor last week laid out plans to link its database technology to the Internet. By this fall, users will be able to perform electronic-mail functions, group collaboration, online transaction processing (OLTP) and decision support on the Internet, company officials said.

Oracle executives demonstrated a full range of business activities over an intranet, including querying a database and placing a wholesale order for goods.

Oracle's most significant claim centered on using the Internet for complex, critical transactions,

such as transferring a bank customer's funds in a single session by debiting one account and crediting another.

"It's very exciting to think about users at PCs, and maybe eventually at automatic teller ma-



Using live data from an Oracle database, Oracle's Express Web Analytic offers 3-D visualizations to help users see patterns in data

chines, arranging loans and interacting with us entirely through the Internet," said Charles D. Walker, president of systems at Wells Fargo Bank in Walnut Creek, Calif.

Richard F. Walsh, a systems manager at Honeywell, Inc. in

Phoenix, said, "OLTP would be a more interactive alternative, a nice complement to the [electronic data interchange] that's already in use here."

But Ira Machecky, a senior analyst at Giga Information Group in Santa Clara, Calif., urged caution.

"Essential to Oracle's vision is that directory services, E-mail messages, documents, even HTML pages belong in a database. Could there be a [database management system] for sale here somewhere?" he asked rhetorically.

Machecky added, "Database centricism doesn't necessarily fit well in the diverse environment of intranets and the Internet."

He said Netscape Communication Corp.'s offerings, although not as capable for database-intensive

sites, are more flexible and open. Microsoft Corp., too, offers several strong Internet and intranet applications, he said, although they are available only for the Windows operating systems.

Database-intensive businesses such as retailers or wholesalers

will be ideal candidates for Oracle's offerings, but a service provider, such as a medical office, might be a limiting factor to some. But on the other hand, it also means that Oracle has gone a lot further than Microsoft has in terms of completeness of its offering.

Products to be released by year's end include the following:

- Version 3.0 of Oracle's Web Server, the first version to exploit the transactional capabilities built in to the Oracle 7 relational DBMS. It will cost \$2,495.

• Version 4.0 of InterOffice collaboration software, which gives users Internet-based or client/server E-mail, scheduling, directory services, document management and Worldwide Web publishing capabilities. It will cost \$500 per user.

- Version 1.3A of Designer/2000, a tool used to generate transactional code and automatically convert client/server applications into Internet applications. It will cost \$3,995.

• Version 1.3.2 of Developer/2000, a fourth-generation language that allows for publishing reports on the Web. It will cost \$3,995.

## Shoot 'em up

With its newly announced WebServer 3.0, which links databases, engines to the Internet and intranets, Oracle has given us improved cartridges.

Cartridges do for WebServer what思科's databases do forIllustra/Informix or what the more prosaically named plug-ins do for Netscape's NetScape server. They extend its

functionality by attaching to the heart of the WebServer, the Web Request Broker.

Cartridges can alter the creation of applications or be applications themselves. Unlike the cartridges now shipping with WebServer 3.0, those shipping with WebServer 3.0 will be able to process transactions (see adjoining story).

—Dan Richman



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# Compaq adds management features to PCs

By Bob Francis

PC market leader Compaq Computer Corp. this week will refurbish its corporate lineups by adding desktop management as a standard feature.

The Houston company is dropping the ProLine moniker and trimming its corporate desktop offerings from four to three product families: Deskpro 2000, 4000 and 6000.

Pricing for the newly designed PC lines, the company's first since April of last year, begins at \$1,100 for the Pentium 100-MHz

Deskpro 2000, which has 8 MB of RAM and an 800-Mbyte hard disk.

The top end is a Deskpro 6000 with a 200-MHz Pentium Pro chip, 32MB of RAM and a 2-Gbyte hard disk.

"These prices are pretty aggressive," said Martin Reynolds, an analyst at Dataquest, a research firm in San Jose, Calif.

"Compaq's got their manufacturing in line, and they plan to compete with Dell and Hewlett-Packard on price. These prices are probably a bit better than what the previous systems," he said.

## Compaq Deskpros get integrated systems management

MODEL	PROCESSOR	ADDED FEATURES	PRICE
Deskpro 2000	100-MHz Pentium to 200-MHz Pentium Pro	An CD-ROM option	\$1,100 to \$5,400
Deskpro 4000	120-MHz Pentium to 200-MHz Pentium Pro	Integrated network card	\$1,600 to \$3,500
Deskpro 6000	160-MHz Pentium to 200-MHz Pentium Pro	Integrated network card, 16 CD-ROM storage options	\$2,600 to \$5,000

Users seemed pleased with the offerings. "They've kept up with the technology, and they seem pretty well-priced," said a PC buyer from a New York bank.

### Positive feedback

The addition of systems management to the line is a good idea, said Erik Goldoft, an IS manager at the national Centers for Disease Control and Prevention in Atlanta.

"That's a major cost factor over the long haul," he said.

The systems management fea-

tures include inventory, fault and security components.

Compaq has also added systems management features to SCSI disk drives, which were previously available only on low-end disk drives.

The Deskpro will be available with Windows 3.1/Windows 95 dual-boot feature or Windows NT. Compaq officials said they are awaiting a version of Windows NT that will allow them to offer a triple-boot feature.

While Compaq has maintained

it continues to face challenges from Dell, HP and IBM in the corporate market, Reynolds said.

Last week, for instance, Dell in Austin, Texas, dropped prices on its corporate desktop line by as much as 14%. The company cited the lower component costs as the reason for the cuts. But analysts said they also suspect Dell wants to maintain a slight price advantage over its cross-state rival Compaq.

 Reviewing laptops? We are, too. See page 39.

## Netscape, Sun and Spyglass post profits

Key industry vendors last week weighed in with strong financial results.

Sun Microsystems, Inc. closed its fourth fiscal quarter with \$2 billion in revenue, a 22% increase in revenue of \$1.6 billion recorded during the same quarter last year.

Net income, however, fell from \$128 million in the fourth quarter last year to \$122 million in the same period this year. But Sun said it took charges of about \$64 million related to its acquisitions of Integrated Micro Products, Inc. and Lighthouse Design Products.

World Wide Web browser rivals Netscape Communications Corp. and Spyglass, Inc. also reported surging levels of revenue and net income.

Netscape reported \$75 million in sales for its fiscal second quarter, more than five times the \$14 million it posted in the same period a year ago. Profits for the quarter topped \$500,000, compared with a \$2.6-million loss last year.

Spyglass had \$6 million in sales for the quarter, up from \$2.7 million, with profits at \$862,000 — more than double the \$356,000 that the Naperville, Ill., vendor posted in the same quarter last year.

## Truce holds for operating systems vendors

By Mitch Wagner  
COLORADO SPRINGS

Developments from last week's Prognosys conference on the future of the network operating system are like a good news/bad news joke.

The good news is that, after years of warring over proprietary technology, vendors are coming together to discuss ways of making those technologies interoperable. But the bad news, experts said, is that it could take years for products to materialize.

"Last year at this time, vendors were facing in different directions. This year they're all turned the same way. We have our faces in the sun now, and it feels good. But there's a long road we have to walk down," said analyst Jamie Lewis, president of The Burton Group in Midvale, Utah, which hosted "Prognosys: The Future of the NOS."

Although there is finally agreement in principle, directory technology is extremely complicated.

Vendors still need to agree on means of security and authentication. Also, needed are means of synchronizing information among directories and maintaining "ownership" of information.

### Different directories

At issue in the negotiations is directory services, an essential network technology that keeps track of all the resources on a network, including users, software and

### hardware components.

Each vendor has its own implementation. As a result, users at big sites need to maintain multiple, complicated and redundant directories.

Those can include one for each distributed application, perhaps one for the network itself, another for Novell, Inc. NetWare, others for messaging applications — including groupware and electronic mail — another for mainframe access and still another for the Internet.

That's too complicated for users. "I need a directory and security services that I can plunk onto the network, and they'll run," said Jay Wiley, an information technol-

### Worldwide server operating system shipments

	1994	1995	1996
923,000	1.2M	1.2M	
259,000	352,000	403,000	
531,000	606,000	688,000	
393,000	720,000	966,000	
321,000	307,000	300,000	
			Presented

Source: International Data Corp., Mountain View, Calif.

ogy manager at Bechtel Group, Inc. in San Francisco. "And they'd better not cut us on my users' productivity because, in that case, they'll cut into profit, and I'll be out of a job."

The turning point in the directory coming-together process came in the spring, when more

than 40 major networking vendors — including Microsoft Corp., IBM, Novell and Netease Communications Corp. — announced support for the Lightweight Directory Access Protocol (LDAP).

Now the vendors have a standardized means for directory products to communicate with one another.

But LDAP doesn't provide standardized data formats for directories. Still required is a so-called meta-directory, a single system that would coordinate the information in the different directories scattered over a user's distributed system, according to Craig Burton, a principal at The Burton Group.

## Can't we all just get along?

**M**icrosoft, Novell, IBM and others vendors last week provided some glimmers of products designed to improve interoperability among multidomain network operating systems.

• **Zentech Corp.** in Toronto displayed its Tiny Zentech preliminary versions of technology designed to help synchronize network directories from multi-

ple vendors. The product will be released by year's end. Pricing hasn't been determined yet.

• IBM said it plans early next year to deliver a single sign-on service. The service will solve a security and access problem now faced by end users in big organizations.

• Novell announced plans to port Novell Directory Services, the directory built in to its NetWare Version 4.x operating system, to NT and leading Unix platforms within 12 months.

and groupware.

• Microsoft said it plans to include support for LDAP in the next major release of Windows NT, code-named Cairo.

• Novell announced plans to port Novell Directory Services, the directory built in to its NetWare Version 4.x operating system, to NT and leading Unix platforms within 12 months.

— Mitch Wagner



# Take Notes

**Lotus to train nontechnical users in human implications of groupware**

By Tim Ouellette

**Lotus Development Corp.** is trying to attract the next wave of Notes users by addressing a problem groupware has had from the beginning: getting people to understand it.

The Cambridge, Mass., company has announced training seminars that tackle the human factors of groupware. Those include the impact of electronic collaboration on the work environment, how to develop workable teams and how to systematically approach the changes that can occur with groupware.

"Lotus needs to expand Notes' business client base beyond technical support people and developers," said Ron Berry, technical risk manager at Barnett Bank Inc. in Jacksonville, Fla. "You need to get people to financial and marketing people that this has strategic benefits."

While widely used now, Notes had a slow start at Barnett because there wasn't a clear explanation up front of what Notes was and what it was supposed to do for the organization, Berry added.

Analysts said they often see Notes installations that don't live up to their potential because users don't fully understand or prepare for the changes it brings.

Stumbling blocks to full implementation of Notes include workers not using it because

come comfortable with it, poorly developed applications and users' reluctance to share information. In many cases, Notes becomes nothing more than a glorified electronic-mail system.

"Since groupware is such a fundamental change in the work environment, the human factor issue is significant to the success of a groupware deployment," said Ian Campbell, an analyst at International Data Corp. in Framingham, Mass. "I don't think even Domino [Lotus' combined Web/Notes server strategy] will have the same effect as training on the success of [Notes] installations."

Avery Dennison Corp.'s office products group is running into this situation as it begins to roll out Notes. Recently, the group's senior executives took one of the over-view seminars.

"The seminar are needed because I find that there is a general lack of understanding of what Notes is," said Jon Whisman, manager of collaboration technologies at the office products company in Diamond Bar, Calif.

But companies trying to roll out Notes 4.0 this year may have to wait a bit to get the training. Lotus is letting its channel partners hold seminars, but they must be certified for the courses before any can be held.

**Notes or Web groupware?**  
See page 49.



Barnett Bank's Ron Berry. *Lotus must demonstrate Notes' strategic benefits to regular business end users*

## Toronto

CONTINUED FROM PAGE 1

Ryan, vice president and chief information officer at CT Securities International, in Toronto. Her company's internal trading system was delayed by the exchange's problems.

The exchange agreed in March to pay \$2 million for a trading system from the Paris exchange rather than build its own replacement for the 20-year-old Canadian Automated Trading System (CATS).

Ironically, the new system is a re-engineered version of CATS.

which the Paris exchange bought from the Toronto exchange a decade ago.

But the deal with the house came only after a painful in-house effort to upgrade CATS, which was written in assembly language to run on hardware from Tandem Computers, Inc.

"We kept getting souled up in internal and technical problems," said Fred Ketchen, a senior vice-president at investment dealer ScotiaMellon, Inc. in Toronto. Ketchen chaired the exchange's Board of Governors during two years of the project.

## News

### Peeking at browsers

Microsoft shipped a second beta version of Internet Explorer last week that some users say closes the performance and functionality gap with Netscape's Navigator.

Microsoft	SHIP DATE	NOTABLE FEATURES	DRAWBACK
Internet Explorer 3.0	Late summer (in beta now)	Built-in Java compiler and ActiveX support Modeled with Windows, Windows 95 and NT GUIs	No Unix version
Internet Explorer 4.0	Q3 1997 (in beta late this year)		
Netscape	SHIP DATE	NOTABLE FEATURES	DRAWBACK
Navigator 3.0	Late summer (in beta now)	Introducing Java support, improved security, its Unique View of the Internet	
Navigator 4.0	Late this year	Integrated Email and Newsreader, Enhanced Directory Assistant, Address Booklet	Not free!

\*Prices vary depending on number of copies bought, but single copies are \$49.

## Microsoft

CONTINUED FROM PAGE 1

pages than comparable test versions of Netscape's Navigator 3.0, said several users who have tried both products. Explorer also supports most of the same fancy HyperText Markup Language tricks as Navigator, such as frames.

"Microsoft has almost completely closed the performance gap," said Bob Dunn, a systems engineer at Advanced Business Consultants, an information systems consulting firm in Lenexa, Kan. That, combined with the fact that users can get Explorer for free or bundled with Microsoft operating systems, means Netscape is under more pressure than ever to innovate, users said.

Imperial Oil Ltd. in weighing Navigator against Explorer for a large intranet. "If they're close in functionality, why not pick the free one? We're torn," said Gary Stedman, an information technology planner at the Calgary, Alberta, company.

But Navigator does trump Explorer in other ways.

For shops with a mix of operating systems, Navigator is the way to go, said John Swartzendruber, a technical manager at Ell Lilly and Co. in Indianapolis. Explorer works only with Windows and Macintosh versions.

Lilly runs Unix, Windows, Macintosh and other servers and PCs and wanted to avoid having different browsers on different platforms, Swartzendruber said.

### A tight race

Microsoft and Netscape are on a race to the finish, timetable, and neck, to ship Version 3.0 editions of their browsers (see chart).

But the war is wearing on some.

The head-spinning pace at which browser upgrades and pre-release copies roll out — a new version every three to six months — has started to annoy some IS managers (see June 25 "Computer world story" at [www.computerworld.com](http://www.computerworld.com)).

The squabbling between Netscape and Microsoft, may even

hamper IS efforts to integrate technologies from different Internet vendors.

For example, a webmaster at a national retailer said he wishes Netscape would include native support for Microsoft's ActiveX programming technology in Navigator, just as Microsoft relented on supporting Java. Netscape has said only that a future Navigator release will support ActiveX via third-party packages.

"All this is a lot of heartache for us — all this marketing and fighting," the webmaster said. "You quickly get backed into a corner," fearing that one product must be chosen over the other, he added.

Then again, perhaps neither vendor will win in the whole browser market any time soon.

"I don't expect one product to crush the other," said Mellissia Hill, author of *Internet Business Strategies*, a how-to book due in September. Most companies will "revisit the issue with each new release," she said.

**Will the Web collapse? See page 66.**

These problems included an overly ambitious schedule, glitches in the proposed Unix-based client/server technology and difficulties matching the exchange's internal messaging format with those of trading firms.

Eventually, the new president of the exchange [Rowland Fleming] decided the better way perhaps was to buy rather than build," Ketchen said. The project, which originally called for the physical trading floor to be closed to 1995, also slipped in its schedule because of the exchange's growth.

The Toronto exchange is the second biggest in North America, handling \$1.1 billion in trades each day — up 30% since last year. Keeping systems running took priority, according to sources who worked on the project.

### Application development

The project was finally shelved last year after internal developers and outside consultants said the new system wouldn't be as functional as the old one.

Firms now call for overhauling CATS, which handles about 25% of trades, to process all trading so the physical trading floor can be shut down by early next year. Har-

ding said installation of the Paris system should be completed by the end of next year.

The Paris version processes trades on Tandem hardware, but it will use a bank of Unix servers from IBM and Sun Microsystems, Inc. to handle communications with trading workstations. It uses Cobol rather than assembly language.

"Certainly, I really would rather that this had been done two years ago," Ryan said. "But I have a lot higher degree of confidence that they will be able to deliver now."

**OpenDoc is ready for serious reviews. See page 54.**



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# Exchange groupware goes unused

By Tim Ouellette

Users are overlooking the groupware features in Microsoft Corp.'s Exchange Server in favor of electronic mail.

Microsoft touts Exchange as an E-mail server with integrated groupware. But

many users — including some early adopters who have been running Exchange since late last year — said groupware features, such as document sharing and the ability to develop applications on top of Exchange, aren't priorities.

"A lot of people see Exchange as the

standard upgrade to Microsoft Mail," said Ian Campbell, an analyst at International Data Corp. in Framingham, Mass. "People are not really exploring the groupware capabilities."

Some user sites aren't interested in tailoring groupware; others may want more

than Exchange offers. This leaves an opening for competitors such as Lotus Notes to steal some of Exchange's thunder. Competitors can fill in the groupware gaps in a market where interest in further collaboration via computers is growing, analysts said.

"The intent with Exchange was migrating our IBM Professional Office System users to a client/server-based messaging infrastructure," said John Charbonneau, manager for electronic messaging at Shell Services Corp. in Houston. "We haven't yet started working on those [groupware] features."

Exchange product manager Greg Lobdell said user aren't doing much groupware work with Exchange. But to make sure users such as Charbonneau don't stray from the Microsoft path, the company in Redmond, Wash., will offer a distributed application-oriented client for Exchange later this year.

Analysts said Exchange still will experience relatively strong growth from users who upgrade from aging and unreliable E-mail systems. But with the growing interest in collaboration technologies, Microsoft may lose many more users to its groupware competitors.

For example, a user at an Exchange site in the Midwest said his firm plans to have 700 users run Exchange for E-mail and 300 or so users run Notes for groupware. The company would consider using Exchange for some groupware functions but will stick with Notes for its comparatively more powerful document repository and replication capability, he said.

#### Functional limits

"Exchange has very simple groupware abilities," said Nina Burns, president of Creative Networks, Inc. in Palo Alto, Calif. For example, users can't view electronic documents, such as reports stored in multiple formats, in Exchange. This limits users' ability to collaborate on projects.

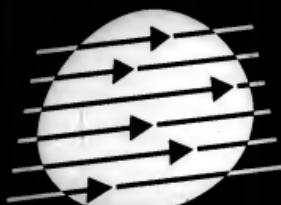
And with Exchange's forms designer, "you can achieve pretty quickly some simple applications," Burns said. But to do real business collaboration, several add-on products are required that aren't found in Exchange, she said. Those include workflow automation, full-text searching and agent technology.

The basic forms designer in Exchange, which works best on 32-bit systems, also leaves out users who run 16-bit systems such as DOS or Windows 3.1.

"There are some limits on our ability to use the electronic forms designer" due to Exchange's dependence on 32-bit systems, said Erik Hansen, director of application development services at Nantex, Inc. "I hope Microsoft does something" to improve the forms designer, he said.

Burns said he would be interested in an Exchange development seminar to help his programmers create applications that exploit more of Exchange than just its E-mail.

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A high-contrast black and white photograph showing a person's silhouette from the side, facing right. The person is wearing a dark jacket and a wide-brimmed hat. The background is very bright and overexposed, creating a stark contrast with the dark silhouette. In the bottom left corner, there is a dark, leafless branch. The overall mood is contemplative and dramatic.

A few thoughts on fame

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## News

# Lawson widens 'net-ready app lead

By Julia King

Lawson Software is poised to take another two steps ahead of the client/server vendors that are racing to deliver Internet-ready applications software.

The Minneapolis vendor this week will announce Insight, a major new release of its client/server financial and human resources software. Virtually every part of Insight can be accessed over the Internet or a corporate intranet.

Earlier this year, Lawson was the first package provider to offer browser-based access to its applications.

Insight contains new activity-based costing, workflow and Internet capabilities that let users deliver a wide array of World Wide

Web-based, self-service applications.

"Lawson has a very clear idea of how the Web can benefit their customers," said Clare Gillan, vice president of applications research at International Data Corp. in Framingham, Mass.

Many other vendors "are still trying to figure out how to incorporate the Web into their applications," Gillan said.

Insight will be shipped as four "process suites" — financials, human resources, procurement and supply chain. The cost per suite is approximately \$150,000 for a 30-user license.

At the New York law firm of Skadden, Arps, Slate, Meagher & Flom, an Insight beta site, about 80% of the company's 4,000 employees have desktop PCs. The plan is to add browser software so workers can access and update via various Java-based applets — their benefit records and other employment information over a corporate intranet.

"We want to leverage the technology employees already have on their desktops. The Web lets them do what they do best — Lawson users without getting into the Lawson database," said Angie Sosches, the firm's payroll manager.

"It also eliminates a big cost because you don't have to have a [Lawson] license for 4,000 people. You can get the use from the Web," she said.

Another beta site, Applied Biosciences International, Inc. in Arlington, Va., is using the software's new activity-based costing feature to track labor and equipment costs incurred in testing new drugs for pharmaceutical companies.

The costing feature, which is embedded across all four process suites, lets users pinpoint costs to specific activities, such as creating customers or processing service calls from established accounts.

Steve Boilek, IS director at Applied Bioscience, said a key benefit of assigning costs more accurately is in the ability to subsequently bid more accurately on future projects.

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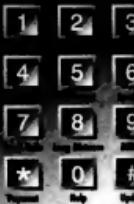
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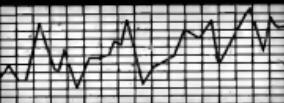
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UK	105.73	0.00	105.73	-0.00	105.73	-0.00	105.73	-0.00
USA	105.73	0.00	105.73	-0.00	105.73	-0.00	105.73	-0.00
Canada	105.73	0.00	105.73	-0.00	105.73	-0.00	105.73	-0.00
Australia	105.73	0.00	105.73	-0.00	105.73	-0.00	105.73	-0.00
Average	105.73	0.00	105.73	-0.00	105.73	-0.00	105.73	-0.00
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A. 2,000+	B. 1,000 - 2,000	C. 500 - 1,000	D. 200 - 500
A. 1,000+	B. 500 - 1,000	C. 200 - 500	D. 100 - 200
A. 500+	B. 200 - 500	C. 100 - 200	D. 50 - 100
A. 200+	B. 100 - 200	C. 50 - 100	D. 25 - 50
A. 100+	B. 50 - 100	C. 25 - 50	D. 10 - 25
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4. How many people are employed at this location and/or your entire organization? Including all of its branches, divisions and subsidiaries?  
 (Select only one per column.)

A. 20,000+	B. 10,000 - 20,000	C. 5,000 - 10,000	D. 2,000 - 5,000
A. 10,000+	B. 5,000 - 10,000	C. 2,000 - 5,000	D. 1,000 - 2,000
A. 5,000+	B. 2,000 - 5,000	C. 1,000 - 2,000	D. 500 - 1,000
A. 2,000+	B. 1,000 - 2,000	C. 500 - 1,000	D. 200 - 500
A. 1,000+	B. 500 - 1,000	C. 200 - 500	D. 100 - 200
A. 500+	B. 200 - 500	C. 100 - 200	D. 50 - 100
A. 200+	B. 100 - 200	C. 50 - 100	D. 25 - 50
A. 100+	B. 50 - 100	C. 25 - 50	D. 10 - 25
A. 50+	B. 25 - 50	C. 10 - 25	D. 5 - 10
A. 25+	B. 10 - 25	C. 5 - 10	D. 2 - 5

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# White House launches cybershield

U.S. moves to safeguard IS infrastructure



By Gary H. Anthes  
WASHINGTON

President Clinton last week launched an effort to defend the nation's vital information systems from attack.

"There is a threat," said Jamie Gorelick, a deputy U.S. attorney general, at a Senate hearing last week. "It's just a matter of time before we have a cyber Pearl Harbor."

The newly created President's Commission on Critical Infrastructure Protection will be chaired by a person outside the government and consist of industry and government officials.

But Stuart Schwartzstein, a visiting fellow at the Center for Strategic and International Studies in Washington, said the government must develop better rapport and credibility with industry if

its initiative is to succeed. He said a series of administration missteps — especially its unpopular encryption policies — have made industry reluctant to cooperate.

The commission's charter is to assess the threats and come back within a year with recommendations for policies to protect the nation's computers and networks. In the meantime, the U.S. Department of Justice is forming an interim task force, led by the Federal Bureau of Investigation, to respond to attacks, help restore service, issue threat warnings and assist in criminal investigations.

"All they have done so far is talk about the problem and say how bad it is," said Caroline Hamilton, who recently served on a Pentagon-sponsored working group on information warfare. "But this [initiative] is a lot better. In-

stead of just appointing another committee, the interim [task force] is actually going to do something right now."

Gorelick said a precursor to the task force, made up of systems analysts at the FBI and the U.S. Departments of Defense and Energy, responded to the recent power failures in the West. The probe turned up no "malfeasance," she said.

The commission will seek ways to protect eight critical areas: telecommunications, electric power, oil and gas, banking and finance, transportation, water supply, emergency services and government operations.

Information systems in those areas "are so vital that their incapacitation or destruction would have a debilitating impact on a regional or national level," Gorelick said.

The announcements may mark a

new willingness by the White House to publicly respond to growing alarms that U.S. systems are at risk. Gorelick acknowledged that there had been a reluctance to discuss threats publicly for fear that advertising the nation's vulnerabilities would invite attacks.

"But [vulnerability information] is all over the Internet," said Sen. Sam Nunn (D-Ga.). "The only people who don't know about it are the people in government with responsibility for protecting the infrastructure."

## Late bloomer

Lee Satterfield, chief operating officer at Wheekarup Corp. in San Antonio, said the company "definitely lost" in the race, but is "a lot better than doing nothing." But Satterfield, a former official at the U.S. Air Force Information Warfare Center, was concerned that a high-level, bureaucratic commission might stifle promising local initiatives.

**& Intrastat monitoring tools are coming. See page 66.**

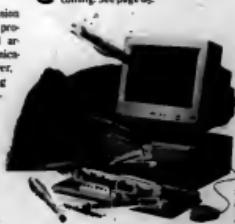


Photo: AP/Wide World

## Turner Broadcasting hopes to win the gold in networking

For the next two weeks, the information systems staff at Turner Broadcasting System, Inc. must contend with more than the usual network strains. Web server hiccups and user calls about missed electronic mail.

Much more.

Turner's Worldwide Information Technology Services is situated smack-dab in the heart of Atlanta and the Summer Olympics.

That means gridlock from a few million more folks downtown, contention for phone lines and security measures beyond the simple magnetic-stripe card needed to enter the data center.

### Crammed time

Half the IS group shares a building with the Atlanta Committee for the Olympic Games, where security is especially tight. So Turner staffers require lots of identification tags for clearance. Some local Turner users and IS supporters are working from home to avoid the crush at headquarters.

But IS customers around the world don't take off for the Olympics, said Charles Hebert, manager of software services support. During this ordeal, users rely on E-mail, Notes, Web servers and network connections, so some operators must remain on-site to handle problems.

On the eve of the Games, Hebert reported no interruption so far in phone service. But this week the call load, and the Games, begin. — *Patrick Dryden*

## Taking it to the courts

Netscape, Microsoft fighting patent infringement lawsuit

By Kim S. Nash

Netscape and Microsoft haven't exactly taken a patent infringement lawsuit filed by Hollywood, Fla., inventor Robin Elkins lying down.

Elkins filed suit in May, claiming that 17 internet vendors, including the two dominant players, violated his patent for technology that sends digital audio signals over networks.

Netscape Communications Corp. is not only denying the patent infringement charges, but also countering Elkins and his lawyers, including legal challenges from the start.

"They intended to defend and cheat consumers. That means racketeering," said Gary Hecker, a lawyer at Hecker & Harriman, the Los Angeles firm handling the suit for Netscape.

Microsoft Corp. has filed for summary judgment, asking the

court to dismiss all charges. Elkins recently signed a document saying that Microsoft didn't directly infringe on his patent, but indirect infringement is still a possibility. Microsoft's lawyer handling the case declined to comment.

But Elkins isn't worried.

"As we get further in [the proceeding], they will realize I have a valid, strong case against them. That's what I'm hoping will happen," he said.

But should the case go to trial, which Netscape has demanded, proving the patent is valid will be just as tough as figuring

out whether anyone infringed on it, experts said.

"There's considerable debate about the validity of the [U.S.] Patent Office to judge," Hecker said. Software technology is actually new and original, said Roland Cole, executive director of the nonprofit Software Patent Institute in Ann Arbor, Mich.

"Especially in the '70s, patents went through without a lot of scrutiny," Cole added.

The suit doesn't specify which vendors' products violate his patent, and it is unclear whether the alleged offenses are direct, indirect or unintentional.



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# COMPUTERWORLD

# intranets

THE MANAGER'S GUIDE TO WHAT'S REALLY IMPORTANT

## PROJECTS

AT&T's new intranet brings automated business procedures to the desktops of 10,000 customer service reps.

Page 4

## ADVICE

Think of intranets as corporate utilities. Focus on creating a secure infrastructure; users can provide content and applications.

Page 4

## EXPLAINER

Hybrid firewalls. The new generation combines authentication, packet filtering, application proxies, encryption.

Page 6

## ANALYSIS



# INNERSECURITY

BY GARY H. ANTHES

Since your intranet is closed to the public, you needn't worry about things that go hack in the night. Right?

Wrong. Intranets are prime targets for disgruntled employees, hackers and competitors.

"Internal networks are now taking on all the properties of the public networks that frighten us — openness, complexity and flatness," observes Bill Murray, a security consultant at Deloitte & Touche.

Worse, user-controlled intranets can leave security to the clueless.

The good news is, established security technology and management practices transplant well into the intranet environment.

Here's a quick spin through some effective tools and tactics.

## TECHNOLOGY TACTICS

### FIREFWALLS

This protective software and hardware blocks unwanted users and activities from intranets. Some companies go a step further, breaking internal nets into subnets isolated by firewalls.

The drawback: Such network balkanization may sacrifice hard-won connectivity.

### ACCESS CONTROL

Protecting individual systems and applications with passwords and other traditional protections may make more sense than using firewalls. These measures are less costly and less likely to block desired activities.

Example: The California Environmental Protection Agency uses passwords and built-in Unix security — such as read/write permissions — to protect the confidential intranet-based data provided by pesticide manufacturers. The agency has an Internet firewall that protects the organization from the public, but no firewalls that protect intranets specifically.

### FIREFENCES

Boston Edison Co. employs "fire fences" — routers programmed with user-specified data packet-filtering — to guard several intranets.

"We are doing traffic policing," explains John Duhel, Boston Edison's planning manager. His particular worries are less about malicious intranet activity than accidents that could slow

or crash a key subnetwork.

### ENCRYPTION

Outside the military, use of encryption is not widespread. But encryption is emerging as a viable intranet security technology. A few companies encrypt files and messages passing over intranets. Almost none scramble data storage.

But immature technology makes encryption "a management nightmare," warns David Bauer, a principal in information systems at Morgan Stanley, an investment firm in New York. Vendors, especially those who sell firewalls, are rushing to simplify products.

### INTRUDER DETECTION

"Intrusion detection" software and other audit tools that spot outsiders and

### DYSFUNCTIONAL FAMILIES





ILLUSTRATION BY PHILIPPE BOUAFIA

suspicious network activity are less useful on intranets, according to Richard Mandelbaum, president of NyservNet, a Great Neck, N.Y., Internet service provider.

Better are sophisticated new audit tools built for the Internet and intranets, such as InCharge from System Management Arts, Inc. in White Plains, N.Y. The software manages Web services, electronic mail, domain name service, file transfer protocol and Usenet news services. It can apply access controls by service, network protocol, network address, time of day and user.

## MANAGEMENT TACTICS

### BUILD IN SECURITY

Short-sighted companies and many non-IS leaders may ignore security. That's because they think it has little impact on user satisfaction or the bottom line. Resist the temptation and build in security from the project start.

Example: One company, which requested anonymity, hired a young Web wizard to establish an intranet. Unfortunately, he never met with the IS

security officer. A subsequent network audit revealed costly security flaws.

#### SOUND POLICIES

Intranet firewalls and passwords mean nothing if confidential data gets posted in a public place, notes California EPA systems analyst John Stutts. IS managers and consultants agree: Written policies and employee security training are key.

Tip: Post your security documentation in hypertext on intranets. "It's a good way to get security documents to the right people at the right time," says Murray, former IBM security czar. And it turns a security liability into a security asset.

*Antkes is Computerworld's senior editor for government and security.*

## ONLINE

For an expanded version of this article, see our online version at [www.computerworld.com/intranets](http://www.computerworld.com/intranets). Also on the site this month:

- Conference: "Are firewalls sufficient for intranets?"
- QuickFix: "How secure do you test?"

## Behind the Firewall

### Intranets are Darwinian.

Strong companies with good security will get stronger, taking intranets in stride. Companies with shoddy security can say hello to a new world of lower pain.

Fortunately, evolution by definition isn't set in stone. Many established Internet security practices and technologies transplant well inside the firewall. The site is the same. Create solid security without going crazy and/or breaking the budget.

A new wave of internet security products should take some burden off IS. Even so, if your security is shabby now's the time to make it stronger. Doing it later goes if necessary. Sure, it will cost you those figures up front, but it could save you a lot later.

Read the preventive counsel of TV sheriff/agent Harry File, who advised: "Hip it Up! Hip it is the best!"

Joseph Magitta  
Editor

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## ADVICE



Today's intranet supports only the Web and has an ill-defined relationship with the installed base of proprietary network operating systems like NetWare. This will change. Over the next few years the role of the proprietary network operating systems will fade as the internet is enhanced with essential, standards-based services. Tom Prozess, analyst, Forrester Research, Inc.

The technology of intranets is a slow climb. Here it comes:  
[Redacted]  
that were in a set of management choices. The number one technical challenge is going from current state to end state. [Redacted] interest. It's leading time, resources and the current technology. When do you turn something off and when do you turn on an end? Alan Frank, chief technical officer, KMPG Post Warwick

Whether you intend it or not, the internet is going to be a utility infrastructure. After people get comfortable with the technology and management, in a slowdown or official plan, you get into the infrastructure development plane. A lot of companies start at standard sites. When

[Redacted]  
you get there, you're going to be in a traditional prioritized project list. Your main objective should be, "How can I implement the infrastructure so that everyone can participate?"

Think about who should be service providers, content providers, application providers. Steve Tolson, internet consultant, Arnold Corp.

Current systems management tools are not equipped to deal with the technologies such as hypertext, Java, etc. In fact, the systems management tools for existing enterprise software market are not ill-equipped that these vendors will be spending the next four years improving these tools to meet today's requirements. (Bob Rial, internet analyst, Frost, Abney-McBain Research)

## PROJECTS



### AT&T Corp.

#### Customer Care Division

Basking Ridge, N.J.  
The largest U.S.  
telecommunications company

Gene Speicher, Division Manager  
Mark Francis, Desktop Solutions Manager

#### What they're doing

Creating intranet-based knowledge management system that gives 10,000 customer service reps desktop access to business procedures and policies.

#### Replicates

Manuscript binders with Post-its attached; classroom training; individual access to 20 legacy systems.

#### Benefits

Helps consolidate 27 call centers into one. Cuts annual training time from 50 days to 25. Creates single point of contact for customers. Reduces average call length by 50%. Enables AT&T to enter the local service market.

#### Cost/time

Budget not available. Two-year project, 50% done.

#### Staffing

Initial process consulting from McKinsey & Co.; 25 consultants from Renaissance Solutions for knowledge management system; 125 content developers; 20 internal IS developers.

#### Tools

Netscape 1.1 browser, Web Author, various Unix/Desktop workstations, Motif GUI, two Hewlett-Packard Co. servers.

**Biggest technical challenge**  
"You're never done. The knowledge always changes and evolves," Francis says.

**Biggest people challenge**  
Building a process and organization that will keep content fresh, and quelling

worker nervousness. "People know this is the leading edge," says Speicher. "They don't want to get left behind. We have to take pains to make sure they understand they are going to participate in a phased, logical way."

#### Advice for IS

"Don't fool with the content," Francis says. "Develop a tool set and infrastructure that allows partners to easily get into it. Do everything you can to make getting content into your search engines as easy as possible."

#### Next steps

Put remaining 5,500 small business reps on system by year's end; integrate with 20 legacy systems; offer customer self-service via World Wide Web site.

—Joseph Maglione

## ONLINE

For an expanded Q&A with Speicher, see our online version at [www.computerworld.com/intranets](http://www.computerworld.com/intranets). Also featured:  
• Speaker spoke: [Read/Listen](#)  
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The Sun Microsystems logo consists of a diamond shape containing a cross pattern, followed by the word "Sun" in a stylized script font, with "microsystems" in a smaller sans-serif font below it.

Digitized by srujanika@gmail.com

## Drill Down

### REPORTS

Building Internet Strategy: How to Leverage the Internet To Your Advantage By Michael J. Forrester, Tom Miron, and Mark B. McCullough, with contributions from Michael L. Koenig, Michael S. Koenig, and Michael T. Koenig Forrester Research Inc., Cambridge, Mass.  
Online: [www.forrester.com](http://www.forrester.com) (617) 497-7091

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### PICK OF THE LIX

Internet Resources for Small Groups While Performing Monitoring Functions by Michael J. Forrester  
<http://www.abics.com>

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### BOOKS

The Computer Internet: A Practical Approach by Alan Borodoff, 215 pages, \$35. Solidsoft, Inc., 1000 University Ave., Suite 100, Berkeley, Calif. 94710-1906, (415) 549-5100.

## Drill Down

## EXPLAINER



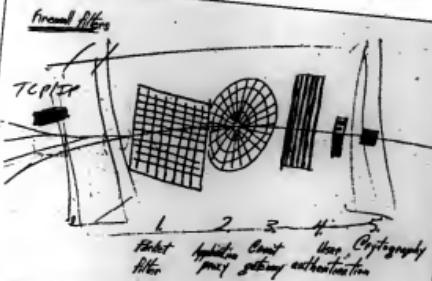
### NEW HYBRID FIREWALLS

Firewalls used to come in well-defined categories: packet filter, circuit gateway or application proxy. Many new offerings are hybrids, employing two or more filtering mechanisms and a mix of techniques.

Some use authentication, which requires users to log in through a server with a password. Others use data encryption, which scrambles outgoing files that contain sensitive information. A system on the other end with the encryption algorithm decodes it.

The diagram at right represents a composite of these elements. Firewalls don't try to encompass all of them; users mix and match based on their needs.

—Charles Babcock



#### 1. Packet filtering

This filtering is often the first on incoming traffic. A router examines each packet and, by following rules programmed into it, accepts messages from certain servers or nodes and drops all others.

#### 2. Application proxy

This special-purpose software restricts incoming traffic to a specified application, such as your E-mail system or Lotus Notes. Likewise, outgoing traffic can be restricted if it comes from an unauthorized application.

#### 3. Circuit level gateway

This gateway connects an outside TCP/IP port to an internal destination, often a shared resource like a printer. An access control mechanism on the gateway determines whether the user connected to the TCP/IP port is coming

from a source authorized to reach the printer. If the user is authorized, the message is passed on without review.

#### 4. Authentication

A system like Kerberos, a standard in the Unix world, gives a user seeking access to the internal network a private key shared with a service on a host. When a key distribution center clears the user's key, it unlocks access to the host service.

#### 5. Encryption

Most outside networks, including the Internet, offer opportunities for listening devices to sense and capture the traffic as it moves along. Encrypting an incoming data stream and passing it through a firewall safeguards against its being picked up.

*Babcock is Computerworld's technical editor.*

Visit our Web site at [www.computerworld.com/intranets](http://www.computerworld.com/intranets) for links to security-minded Web sites or to consult our glossary.

## Netscape's James Barksdale on Informix.

James Barksdale  
President and CEO,  
Netscape Communications

"Netscape partners with  
Informix because of its  
unique Web database  
technology."

Together, we provide customers an  
ideal solution for next-generation,  
high-performance, content-rich  
Web applications."

Jeff Hudson  
VP of Business  
Development,  
Informix

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combines high performance with the  
ability to manage a wide range of  
new datatypes—image, video,  
text, geo-spatial, and more.  
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*Forrester defines Full Service Intranets as standardized e-mail, directory, file print, and network management. Netscape gets high marks in Satisfaction at this key point in the development process.*

*The Forrester Report  
The Full Service Intranet, March, 1996*

And PC WEEK said:

*Forrester is also touting our Internet-based technology for internal use. [Netscape] SuiteSpot is shaping up as a better alternative...*

*-PC WEEK, May 13, 1996*

Netscape's full range of intranet solutions provides greater functionality and costs less to implement than proprietary intranet solutions like Lotus Notes and Microsoft BackOffice. In fact, when Forrester polled professionally managed Web sites, 80% indicated they had chosen Netscape.

So call, or visit our Intranet Solutions site at [home.netscape.com](http://home.netscape.com) to find out for yourself. And breathe a sigh of relief.

# Computer Industry

## Strong results defy slump in tech stocks

By Juan Carlos Perez

After a stormy week and a half that saw technology stocks plunge on disappointing reports from various industry pillars, several big-name computer companies last week reported strong earnings.

The positive earnings show that Wall Street's loss of confidence in computer industry stocks was unwarranted, analysts said. Computer companies across the board recently saw their share prices drop after disappointing reports from companies such as Hewlett-Packard Co. and Motorola Inc.

Investors should realize from last week's strong reports that the computer industry must be looked at in segments, not as a single entity, said David Takata,

an analyst at Gruntal & Co. in Beverly Hills, Calif.

Large systems are doing well and so are companies that provide networking hardware, he said. And despite reports to the contrary, the PC industry is right on track, said Chris Garland, an analyst at The Chicago Corp. in New York.

For example, EMC Corp., a provider of midrange storage products, closed its second fiscal quarter with revenue of \$345 million — a quarterly record — up from \$279 million in the same period last year.

And enterprise software vendor Computer Associates International Inc. achieved its 19th consecutive quarter of double-digit growth with its fiscal fourth quarter, which ended June 30. Revenue was \$792 million, up from \$577.4

million in the same period last year. Net income also rose from \$88.5 million last year to \$119.7 million.

"In particular, Intel's report tells us there's no fundamental decline in PC demand," Garland said. "There's been a lot of overreaction."

Intel Corp. closed its second fiscal quarter with net income of \$14.0 billion, up from the \$87.9 million net income reported in the same period last year. Revenue rose to \$4.62 billion from \$3.89 billion last year.

And Garland predicted the PC business will be further helped by expected good earnings from Dell

Second-quarter 1996 earnings

	REVENUE	PERCENTAGE	NET INCOME	PERCENTAGE
	APRIL	MARCH	JUNE	JUNE
	(1995)	(1995)	(1995)	(1995)
Apple Computer	\$2.17B	-15%	-\$52M	NM
Computer Associates	\$792M	37%	\$119.7M	-35%
EMC	\$545M	14%	\$14.0M	-9%
Microsoft	\$230M	36%	\$21.6M	7%
Intel	\$4.62B	19%	\$1.04B	18%
Symantec	\$6M	68%	\$862,000	+42%

Computer Corp., Compaq Computer Corp. and Gateway 2000, Inc. in the coming weeks.

Even embattled Apple Comput-

er, Inc. surprised analysts with stronger-than-expected earnings. Apple narrowed its losses to a \$32 million net loss.

## Amdahl sees \$250M loss with change in direction

By Michael Goldberg

Amdahl Corp. expects to post a \$250 million quarterly loss next week as it struggles to branch out from its mainframe roots.

The company said it will write off \$130 million worth of outmoded water-cooled, bipolar mainframes. These machines have suffered dramatic price plunges in the year since System/390 vital

1995, up from 45% last year. In 1995, Amdahl posted about \$28.5 million in profits on revenue of \$1.5 billion.

That change in product mix — and Amdahl's balance sheet with \$450 million in cash — gives reason for long-term optimism, said Thomas Rossiter, a financial analyst at Donaldson, Lufkin & Jenrette Securities Corp., in New York.

Amdahl's profit/loss



## Candle shines on CleverSoft

By Bob Francis and Tim Ouellette

Candle Corp. this week will jump into groupware management with the acquisition of CleverSoft Inc., a provider of Lotus Notes management software.

With the acquisition, Santa Monica, Calif.-based Candle will add application management to its current line of systems and performance management products. Candle, which is privately held, didn't announce terms.

CleverSoft's flagship product is CleverWatch, which monitors and manages Notes servers. Candle

officials said they plan to add the product to Candle's Command Center systems management tools for mainframe, Unix and Windows NT environments within two to three months.

CleverSoft, a 3-year-old start-up based in Scarborough, Maine, has been successful in snagging harried Notes administrators with tools to manage Notes servers. Those users seemed pleased with the acquisition.

"This gives them [CleverSoft] a lot of backing," said Mike

### Groupware management

The integration with Candle's Command Center tools will help users manage both legacy and newer groupware networks from one location. And the move gives Notes users another option to connect their Notes applications to enterprise systems.

#### Encouraging aggressive

According to Paul R. Mason, an analyst at International Data Corp. in Framingham, Mass., Candle's move shows some new aggressiveness on the part of the company. "This puts a stake in the ground for application management," he said.

Candle said it plans to add application management products for SAP AG, PeopleSoft, Inc. and custom-developed applica-

tion models, which are air-cooled and less costly to use.

After Amdahl's three consecutive quarters in the red and its traditional mainframe business facing stiff competition from IBM and Hitachi Data Systems Corp., some industry observers are skeptical about the company's ability to pull out of its tailspin.

But the company is making progress in its efforts to derive more revenue from software and services. The company said those nonhardware sales will contribute more than 80% of total revenue in

While playing catch-up to introduce its own CMOS-based mainframes, due out in bulk shipments in the fall, Amdahl has sought to branch out.

Besides reselling Sun Microsystems, Inc.'s Unix servers, the company has spent \$46 million in the past year to buy two technology consulting companies, DMR Group and Trescom Business Systems. And this fall, Amdahl is due to start selling its own line of Windows NT servers, Envista JCV, May 6.

Staff writer Juan Carlos Perez contributed to this story.

Notes networking



Source: The Yankee Group, Boston

You see a horse race. We see two thoroughbreds.





A lot of other companies do, too. They're running both the Windows® 95 and the Windows NT® Workstation operating systems.

Why? Because they want to realize the benefits of a more reliable, more manageable operating system. They also want to run the latest versions of their applications<sup>®</sup> and take advantage of exciting new Internet technologies. That's why seven out of ten organizations<sup>™</sup> have deployed (or are planning to deploy) Windows 95 and/or Windows NT Workstation: They know that both are safe bets.

The reason we developed both operating systems is twofold: First, to achieve maximum compatibility with our customers' existing hardware and software, and second, to provide them with an even more reliable and secure operating system.

Today, customers can run most of the same applications across both Windows 95 and Windows NT Workstation. And soon, with the release of Windows NT Workstation 4.0, both products will share the same user interface.

What's the right mix for your organization? That depends on what you need. Windows 95 is the easiest way to migrate to 32-bit Windows. It not only supports a third more hardware devices than Windows NT Workstation, it also has lower system requirements. Windows 95 also offers greater compatibility with certain MS-DOS<sup>®</sup> applications. What's more, it has two functions that Windows NT Workstation, for the time being, does not: Plug-and-Play, and Power Management for mobile users. Windows NT Workstation, on the other hand, offers greater reliability and security, thanks to its advanced microkernel architecture. It's simply one of the most powerful and robust 32-bit desktop operating systems you can get.

So if you thought you needed to hedge your bets, you don't, because this is no horse race. In fact, we will continue to support and update each product in the future since our customers continue to want both the broad compatibility of Windows 95 and the power of Windows NT Workstation.

For more help determining the best mix for your company, visit [www.microsoft.com/windows/mix2/](http://www.microsoft.com/windows/mix2/)

## Microsoft plugs in

Hold off on last rites. Cancel the funeral procession. Like it or not, Microsoft is quickly becoming a major force on the Internet.

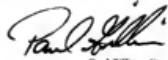
As demonstrated by a *Computerworld* survey of more than 700 IS managers that was published last week, Microsoft is pulling even with Netscape in Web server mind share, a leading indicator of buying intentions. Equally remarkable is the speed at which Microsoft closed the gap; its mind share doubled in just three months.

Netscape is clearly still the browser leader, with more than 70% of the corporate installed base. But Microsoft's Internet Explorer 3.0 is a pretty good alternative, and it's free. Anyway, I don't think browsers are going to count for much in the long term. Users shouldn't have to flip to another application every time they want to grab something off the Internet. Over time, Internet functions will be absorbed into the operating system and desktop applications. Guess who benefits from that?

Sure, you can argue that Microsoft is gaining market share by giving away products. But that's exactly what Netscape did with Navigator and Sun with Java. Microsoft's strategy is the same as the one it used to win in operating systems and applications: enter the market late, sell stuff cheap, oust the competition, then raise prices. Microsoft certainly won't dominate the Internet the way it has the desktop, but it doesn't have to. All it has to do is give people a reason to continue buying PCs, most of which will be studded with Microsoft products.

I see three possible developments that could stand in Microsoft's way. One would be trying to make Internet standards proprietary. But that would be stupid. A second involves the operating-system-less network PC concept taking off. Given the profound lack of end-user enthusiasm for this concept, I think that's unlikely. A more realistic scenario is that the high costs of building Microsoft's Internet business could strain Microsoft's earnings, tarnish its reputation of invincibility and demoralize employees who hold stock options. That's a possibility, but it would take more than a couple of quarters to erode 30% desktop market share or put Windows NT dead in its tracks.

In the meantime, corporate IS managers will continue to favor dealing with a few companies that can deliver competitive, integrated products. And Microsoft will be high on their list.



**Paul Gillin**, editor  
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[www.alink.net/~pgillie](http://www.alink.net/~pgillie)

## Viewpoint



## Raising the red flag of 'diversity'

Your June supplement, *The 100 Best Places to Work*, was fascinating. I do, however, question one of the criteria you listed diversity.

Once upon a time, before the PC police laid waste the English tongue, diversity meant a variety of ideas, approaches, ideologies, religions, disciplines, preferences and the like. Now, alas, the mother tongue has been pre-empted by a bunch of politically correct code words. Gay doesn't mean happy or festive; black is a culture rather than a color; age defines one's merit and out comes are irrelevant.

I take umbrage at that [diversity] criterion and your use of it. For the American workplace to have the vigor it needs to compete in world markets, it needs real diversity—the competition of ideas, even those you and I don't like, to find the ones that work best and use them to win.

It seems to me that one of the prime criteria of a good place to

**COMPUTERWORLD**



work is that it and your job will survive in the face of competition. Not true?

Charles H. Collins Jr.  
Kenilworth, N.J.  
[chcoll@superlink.net](mailto:chcoll@superlink.net)

I was pleased to see the June *Computerworld* supplement titled *The 100 Best Places to Work*. After the mention of diversity on the cover, I

looked forward to seeing how these "best places" addressed the needs of lesbian and gay employees, how inclusive their non-discrimination statements were, if they recognized gay/lesbian/bisexual employee groups and which had domestic-partner benefits. Sadly, all of this was missing.

I appreciated the piece on Digital Queens you ran a while ago. I hope that future articles in *Computerworld* really can be more inclusive of all of us.

**David Barnett**  
Acting director  
Office of Gay, Lesbian  
and Bisexual Concerns  
University of Illinois at Chicago

Given the huge 'ol' gays and lesbians in the computing field, it's rather surprising that no mention of benefits that cater to them was made in your recent supplement, *The 100 Best Places To Work*.

You might do well to examine the wide range of computer companies that offer domestic-partner benefits. Anyone who objects to such companies' practices — which amount to giving equal pay for equal work — is welcome to go back to using pencil and paper. \*

**Dan Ross**  
Madison, Wis.

## Consider the source

*As I consume business-oriented articles and broadcasts of other media outlets such as The Wall Street Journal and CNBC, I notice that whenever one of them uses material or opinions of people from within their own company or its partners or subsidiaries, they are clearly labeled as such.*

*I believe Computerworld would be well-served to follow the example of these publications. Whenever a viewpoint from an*

*employee of International Data Group or International Data Corp. is used, it should be noted that the source of the quote or opinion is an employee of a partner or subsidiary of Computerworld.*

*The benefit to readers would be a more thorough sense of the perspective and diligence of Computerworld's editorial and reporting staff.*

**William Lucas**  
Folsom, Calif.

**Computerworld** welcomes comments from readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, P.O. Box 9191, Stamford, Connecticut 06917, Fax: (203) 975-0930. E-mail: [letters@ew.com](mailto:letters@ew.com). Please include an address and phone number for verification. 



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# Servers & PCs

## Mac clones a viable option

By Lisa Picarile

New Macintosh clones that are faster and less expensive than any machines currently offered by Apple Computer, Inc. have Macintosh users seriously considering Macintosh-compatible systems as a viable alternative.

Machines from Umax Computer Corp., Digistar Digital, Inc., Motorola, Inc. and Power Computing Corp. give users more options than ever — and users are exercising those options.

Three months ago, John Papa, a partner at The Carson Group, a financial services firm in New York, said his company, which has 150 Macintoshes, was evaluating Macintosh clones. It re-

Baltimore, said the clone makers have something Apple doesn't have. "They can copy off Apple, then tweak the code to make them better and faster and cheaper," he said.

That is exactly what Power Computing is doing. The Round Rock, Texas, firm is set this week to unveil four new high-end Macintosh clones that are faster than any machine available from Apple (see chart below).

"Most observers and users said that while initial efforts from the clone vendors may cannibalize Apple's sales, in the long run, clones will help boost the overall Macintosh platform."

"Mac clones are going to be either successful or very successful," said Peter

thing for me and for Apple if the Mac clone vendors are successful," Papa said. Big deals are helping to boost the production of Macintosh clones in corporate accounts. Power Computing recently sold 3,000 systems to a division of Lockheed Martin Corp. — the largest Macintosh site in the world, with more than 40,000 Macintoshes.

"The clones seem to be living up to their promises," Nazarian said.

That fact has changed some Macintosh users' attitudes from wait-and-see to try-and-buy.

### Considering clones

Mark Stelzer, editorial publishing director at Gruener & Jahr U.S.A. Publishing in New York, said his company has five Macintosh clones "in low-risk situations that are nonmission-critical areas." The solid performance of the Macintosh-compatible machines has prompted Gruener & Jahr to invite Power Computing to bid off providing computers for the

**High-End PowerPCs for the Mac OS**  
All systems have basic-level configurations with a 20-MHz hard drive, six Peripheral Component Interconnect slots, 64M bytes of RAM and a 24-bit graphics accelerator

	Power Computing	Apple	(1996)
Processor	225-MHz PowerPC 604E	150-MHz PowerPC 603	150-MHz PowerPC 603
Cache	512K bytes, Level 2	512K bytes, Level 2	512K bytes, Level 2
Video RAM	8M bytes	2M bytes	4M bytes
CD-ROM	Bx	Ax	6.7x
Price	\$4,995	\$4,799	\$3,995

cently purchased 15 Macintosh-compatible systems from Power Computing.

"The price was right, and they're fast machines," Papa said. "They crank."

Victor Nazarian, computer systems director at Harbour Inn Medical, Inc. in in

Hartford, Conn., editor of "The Hartford Ledger," an industry newsletter in Alpharetta, Ga., who estimates that 1998 Macintosh clones will account for 30% of Macintosh sales,

"As far as I'm concerned, the best

entire editorial staff."

Papa said that, thanks to the positive experience with Macintosh clones, he now considers Power Computing a primary source and not just a secondary option to Apple.

## New notebooks offer challenge to desktops

By Chris DeVonye

Although they are pricey, three new notebooks challenge desktop machines in almost every category.

Computerworld evaluated three comparable notebooks from Digital Equipment Corp., Hewlett-Packard Co. and Toshiba America Information Systems, Inc. that have prices hovering at about \$6,000. Like their desktop brethren, the notebooks — all weighing less than 8 pounds — combine a 123-MHz Intel Corp. Pentium processor with 16M bytes of memory, a 1G-byte or greater hard disk, a multiple-speed CD-ROM drive, a 16-bit SoundBlaster-compatible sound card, stereo speakers and 16-bit color with at least 800-by-600-pixel resolution.

These notebooks are so capable that they could eliminate the need for a separate desktop system.

Toshiba's Tecra has a slight edge if you need the highest-resolution screen to run many windows. Digital's Hi-

Notebook II has the advantage when weight is a concern. The HP OmniBook leads in multimedia skills.

### Toshiba's Tecra 720CDT

As the Mercedes of the portable set, the \$6,259 Tecra 720CDT offers almost every possible feature for powerful office, telecommunication or prestation tasks. The emphasis is on speed and flexibility.

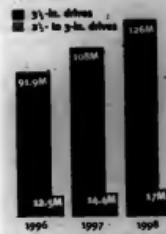
The Tecra sports a 12.1-in. thin film transistor (TFT) screen that displays 16-bit color on an incredibly dense 1,024-by-768-pixel screen. Though still overpowered by sunlight, the TFT display is sharp, capable of photorealistic presentation and has the resolution to handle the multiple windows of Corel Corp.'s WordPerfect Office or a programmer's workbench.

The 720CDT offers a six-speed CD-ROM drive rather than the standard four speeds of most portables. The unit holds either the CD-ROM or the 3½-in. floppy disk drive.

Notebooks, page 40



Projected worldwide rigid disk drive shipments



Source: DiskTrend, Inc., Mountain View, Calif.

## Disk sales heat up

By Jay Kumar Vijayan and Stewart Deck

ales of hard disk drives are spinning through the roof.

Driving those sales are dramatic improvements in technology, plummeting prices and exploding demand for online storage.

"People are starting to store more things on disk because it is faster," to access, applications and more cost-effective than storing it on the network, said LaMarr Norman, microcomputer manager in the radiology department at the University of Florida in Gainesville. "We only keep data files and maybe the graphics libraries on the server," and all other applications reside on individual desktops, Norman said.

At a result, the radiology department's average hard disk drive capacities have increased many times over, from a mere 80M bytes six years ago to nearly 2G bytes today. "And the interesting thing is we are probably paying less for these drives than we did for the 80M-byte drives," Norman added.

"Our disk drive capacities have gone up by a factor of three or four times over the last two years," from an average of about 300M bytes to about 850M bytes today, said Steve Booth, a microcomputer consultant at Wisconsin Electric Power Co. in Milwaukee.

Driving that capacity increase has been a variety of factors — including the migration of multiple applications.

**Hard disk sales, July '95**

## Servers & PCs

### Notebooks offer challenge to desktops

CONTINUED FROM PAGE 39

and an external cable on the floppy allows both to be used at the same time. You occasionally need the floppy and CD-ROM online at the same time to install new device drivers or an operating system such as Microsoft Corp.'s Windows NT 4.0.

The built-in speakers provide somewhat tinny sound but have volume sufficient for an office. External speakers needed for larger presentations, headphones and an external microphone can be plugged in to the back of the unit.

The unit's built-in 28.4K bit/sec. fax/modem, coupled with the built-in microphone, doubles as a modest-quality speakerphone that gives employees a communications advantage when users are at an airport or hotel.

The 730CLT notches two firsts in its belt for industry-standard Cardbus and Zoom Video (ZV)-capable PC card slots. Cardbus is the new 32-bit version of the PCMCIA add-on cards that lets users plug in 100-BASE network and fast SCSI-II cards. ZV video, which gives PC cards direct access to the video controller, adds better video capture, MPEG-1 playback and videoconferencing capabilities than users could get with earlier notebooks.

Additionally, Teva uses the old 115K bit/sec. infrared port, sufficient for printing but scandalously slow for file transfers or network links. Its basic 7-pound weight — almost 9 pounds with power supply and floppy disk — puts the unit on the chunky side. But the weight is worth the capabilities.

Toshiba, in Irvine, Calif., can be reached at [www.toshiba.com](http://www.toshiba.com).

#### Digital's HiNote Ultra II

The HiNote Ultra II is packed as the smallest and lightest full-featured 133-MHz notebook. It weighs about a pound less and is a half-inch trimmer in height and length than comparable notebooks.

With its optional multimedia adapter (\$699), an additional 8M bytes of RAM (\$599) to boost the total to 16M bytes and power supply (no extra charge), this notebook's traveling weight is a meager 7 pounds. By swapping modules or dropping the battery, the basic unit can hit the scales at a very light 3 1/2 pounds. Total price, including the options: \$5,977.

With its smaller form factor, you get a 10.2-in. active-matrix display capable of 800 by 600 pixels in full 16-bit color. Digital introduced a 12.1-in. display after this review was completed. Although the pointer —

trackball — can be clumsy, the keyboard retains its standard portable size and full functionality.

The unit snaps in to the optional multimedia adapter, which contains 4x CD-ROM dual speakers, hardware volume control, earphone and microphone jacks. Although the audio quality rates as acceptable, the volume control fails at high volume levels.

To use a floppy drive, users must shed the multimedia adapter and mount the wedge-shaped floppy adapter underneath. Unfortunately, this arrangement prohibits using the floppy and CD-ROM at the same time, causing some double-stepping when installing some PC cards and forcing users to install Windows NT 4.0 from a network. Two Type II PC card slots are included but not the newer 32-bit Cardbus or ZV capabilities.

The HiNote Ultra II also forces some other compromises. Many ports have sliding doors, but the video-sensor port, parallel ports use a removable and easy-to-lose rubber cover.

The 115K bit/sec. infrared port is located on the left side rather than the back, forcing some shuffling on cluttered desks.

Fortunately, the HiNote Ultra II doesn't sacrifice power with its small size. For those carrying a heavy load, the lightweight Ultra II may be the perfect match, offering computing power while not adding to the load.

Digital, based in Maynard, Mass., can be reached at [www.pc.digital.com](http://www.pc.digital.com).

#### HP's OmniBook 5500

Not the lightest or smallest, the \$6,150 OmniBook 5500 packs as much 133-MHz Pentium wallop into its 6-pound frame as one can expect.

Our test machine also featured a spacious 3G-byte hard disk drive. The OmniBook 5500's 12.1-in. active-matrix screen runs at 800 by 600-pixel resolution in 16,536 colors — large enough for presentations and true enough for displaying flesh-tones or landscape photographs. HP also offers options for National Television Standards Committee/Phase Alternating Line composite and S-Video outputs to directly connect a monitor or VCR to the computer.

The dual-stereo speakers produce good sound but lack the power to overpower a small coinfo office. Jacks for external speakers, headphones, microphone and joystick fulfill all required multimedia connections.

The OmniBook uses a 4x CD-ROM and plugs in to the same slot as the 1.44M-byte floppy drive. The floppy can be used inside or outside the system, so installing drivers or Windows NT 4.0 is no problem. The system sports two Type II PC card slots but neither are Cardbus or ZV-capable.

If you are looking to make the wireless connection to a printer or network, the OmniBook is one of the first computers to use the new 4M bit/sec. infrared port. Devices

such as the HP Netbeam IR or Extended Systems JetEye Plus and the Windows 95 Jedi drivers let users transfer or print files wirelessly from the notebook to any network device at near-network speeds.

Hewlett-Packard, based in Corvallis, Ore., can be reached at [www.hp.com](http://www.hp.com).

#### Commons problems

All three notebooks share a common problem faced by those who make presenta-

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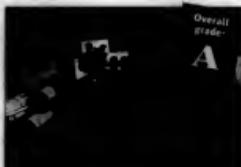
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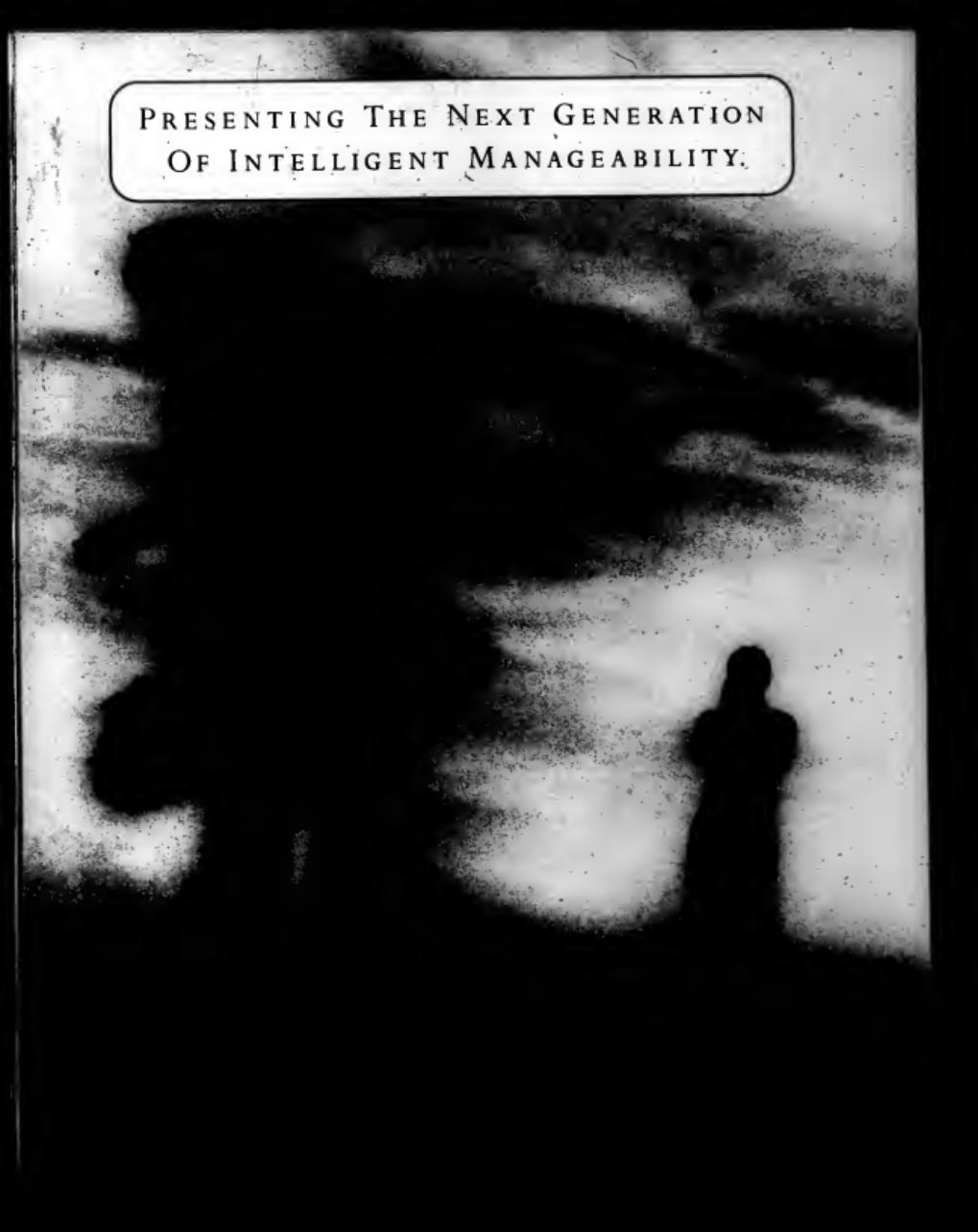
tions on external video projectors. Because external projectors can't handle video beyond 640 by 480 or 800 by 600 pixels, users must reduce the resolution via the Windows video driver.

Also, in spite of the video advances, the speed of each TFT display hardly rivals a desktop. Although based on the Peripheral Component Interconnect bus, the three machines offer video performance of one-sixth to one-eighth of a 133-MHz Compaq Computer Corp. DeskPro. Extremely video-intensive tasks, such as computer-aided design or 30 frame/sec. video, still work better on a comparable desktop system.

The upshot is you must compose your presentations twice, once for on-screen resolution and once for the projector's resolution.

DeWayne is a syndicated columnist in Seattle. He can be reached at [cdewayne@comcast.com](mailto:cdewayne@comcast.com).

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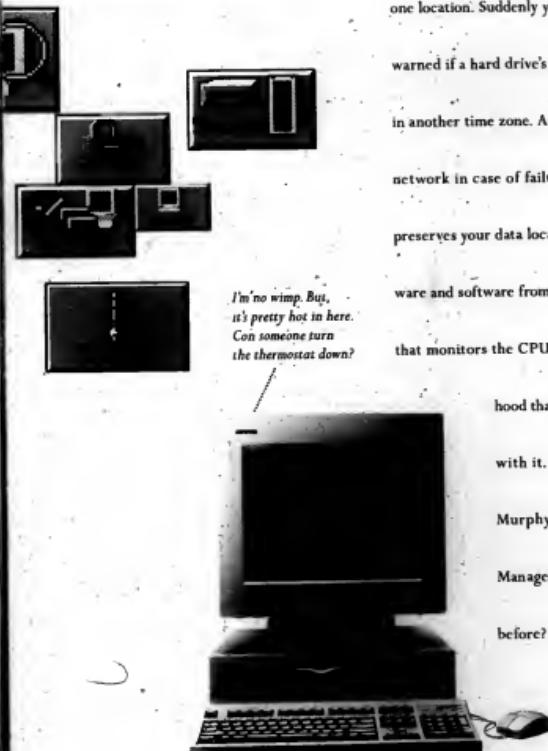


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## Hard disk sales

CONTINUED FROM PAGE 39

off mainframes to a client/server environment and migration to larger 32-bit Windows NT application environments — which require more disk space.

Trends such as those are making the growth outlook for the rigid disk drive in-

dustry better than ever, according to a recent report from Disk/Trend, Inc., in Mountain View, Calif. The company estimated that this year about 109.2 million rigid disk drive units will be sold worldwide. That represents a 21.5% increase over last year. Continued growth in shipments is forecast for the next three years, with the 1999 total projected at slightly more than 170 million drives.

As vendors try to keep up with this

mushrooming demand, users can expect to see steadily falling prices and greatly enhanced storage capacities.

The price per megabyte of online storage has been going down, said Disk/Trend President James Porter. In 1990, vendors charged OEMs \$2 per megabyte. "Last year, it was 25 cents, and in 2000, it is going to be 2 cents," Porter said.

At the same time, dramatic annual increases in disk recording densities are

pushing up typical disk drive capacities faster than ever, said the Disk/Trend report. This has resulted in a flood of relatively high-capacity drives from most vendors.

For instance, most PCs sold last year had average disk drive capacities ranging from 500MB bytes to 1GB byte. This year, the figure is expected to be in the 1.3G- to 2G-byte range, and next year, most hard drives will be upward of 2G bytes, Porter predicted. By 1999, drives in the 5G- to 10G-byte range are expected to be common across PC lines.

While the demand for higher-capacity drives has been increasing, there is also a continuous trend toward drives with smaller disks, according to the Disk/Trend report. For desktop PCs, network file servers and mainframe storage systems, 3½-in. drives continue to dominate. Shipments of 2½-in. drives, which are predominantly used in notebook computers, are also expected to grow dramatically over the next three years.

Meanwhile, sales of hard disk cartridge drives are being boosted by the growth in demand for all types of removable media disk drives, the report said.

The report predicted that after this year, no drives with disks larger than 5½ in. are likely to remain in production.

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## New Products

NSM Jukebox has introduced Mercury 40 Net, a large-capacity CD-ROM jukebox.

According to the Bensenville, Ill., company, Mercury 40 Net was designed for direct connection to a Novell, Inc. network for fast data access from any workstation on a network. It holds 150 CD-ROMs and has four CD-ROM readers. It provides control and data routing through a single Ethernet cable and connector.

Pricing for Mercury 40 Net starts at \$21,000.

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Sony Electronics Corp. has announced DXC-950, a remote video camera.

According to the San Jose, Calif., division of Sony Corp., the camera can be flash-synchronized, which allows any photographic to be taken immediately using a connected camcorder or printer. It can also simultaneously activate an external unit, still camera and other connected units.

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Review: OpenDoc shapes up as worthy platform, §

# Software

## Notes to survive Web foes

By Tim Ouellette

Users are starting to get their hands on World Wide Web-based collaboration products that offer alternatives to the likes of Lotus Notes. But don't expect Notes to go the way of the dodo bird as a result.

"None of the so-called Notes killers in the market have the Lotus approach," said Ed Friedman, president of Radnet, Inc., a manufacturer of

**Web** Web-based groupware Corp.'s idea is to give users

— an application development platform that can be customized and has strong, built-in administration and security — is a good framework for some sites, he said. But others may need something simpler.

Web-based products such as Radnet's WebShare may lack infrastructure, but they make up for it with ease of use, flexibility and accessibility. Groupware, page 52

# The batch is back

By Michael Goldberg

**G**ood old "batch processing" doesn't have the same myth-on-load buzz as all things Internet do, but many mainframe users say batch jobs are still among their most important tasks.

So System/390 users concerned about the growing demands on their resources — and the shrinking time available to process batch jobs — reacted hopefully to a new technology pact between IBM and BMC Software.

IBM plans to offer early next year software called SmartBatch. The product merges three technologies that IBM and Houston-based BMC have developed separately: long-minimally parallel processing capabilities to System/390 batch jobs. By splitting batch jobs into smaller tasks that can be distributed to available parts of one mainframe — or to several mainframes connected in a Parallel Sysplex — the companies said they can speed up the work (see chart).

Pricing information for SmartBatch isn't available but will be when the product debuts in the first quarter of next year.

Performing a batch job means processing a group of transactions at one time, such as the results from a day of banking activity or a week's insurance

### Three for the road

**Batch Accelerator** splits a large data-processing job into pieces and allocates them to different processing resources, depending on which resources are available.

**BatchPipes** allows data from one job to move through processor storage without going to connected storage devices.

**Batch Accelerator** prepares information from the batch processing job that, depending on the application, will give access to the most-needed information first.

claims. The product of such a batch could show the bank customers' account balances or all the stock items needed from a mail-order company's warehouse.

At Epsilon, Inc., a database marketing company in Burlington, Mass., with two IBM mainframes, the amount of batch processing data "is growing geometrically," said Larry Jones, vice president of information systems. This puts more pressure on his computing resources at a time when his customers want information turned around faster, he said.

Jones said his company, which uses IBM's BatchPipes to speed up some of its batch jobs, is evaluating SmartBatch and deciding whether to implement a Parallel Sysplex configuration. The concept behind SmartBatch is "excellent," regardless of a Parallel Sysplex setup, he said. "The amount of data is increasing, and to get the work done, you need innovative ways of doing that," he added.

Analysts praised the IBM-BMC deal as one that addresses the causes of batch processing, especially for large companies with around-the-clock demands on their information systems.

But SmartBatch isn't a panacea. It requires that batch processing jobs be split into components to be most effective, said David Flyer, a research director at International Data Corp. in Framingham, Mass. SmartBatch is valuable for lots of batch jobs but not everyone, he said. For example, SmartBatch wouldn't be good for a "gigantic" batch job that isn't suited to distributing the work, Flyer said.

Ed Carr, a Philadelphia-based analyst at Aberdeen Group, Inc., said SmartBatch should help mainframe users improve the productivity of their processors in batch jobs, especially as more users implement Parallel Sysplex. "If you have 16 processors, unless you have a product like this to do load balancing, you might have two or three working and the rest sitting there idle," Carr said.

## Vendors tailor their PC-to-Unix links to intranets

By Craig Stedman

Makers of software that lets PC users run Unix applications are rushing to catch the instant express.

Network Computing Devices, Inc. (NCD) and Hammingbird Communications Ltd., earlier this month, enabled their rival PC X servers to launch intranet-based Unix programs from within Worldwide Web browsers.

This initial support is a prelude to the planned shipment next year of PC X products that will embrace an upcoming Internet version of the industry-standard X Window System protocol.

Future support is also planned for centrally configuring PC-to-Unix links from a Web browser, instead of having to do it user by user.

Several systems administrators who manage PC X server installations said that capability and the support for using Web browsers as a launch pad for X applications could make life easier for users.

"We certainly are putting a lot of applications on our intranet, and I think there's a good likelihood that we

could go somewhere with this," said Stan Weber, network architect at Chevron Canada Re-

sources, a Calgary-based oil production and exploration arm of Chevron Corp. in San

Ramon, Calif. The 120 users of NCD's PC-Xware software for X Windows, page 50



## X Windows

CONTINUED FROM PAGE 49

the Chevron unit currently have to start X Window sessions on their PCs and manually enter commands to run Unix applications on remote hosts, Weber said. Embedding the Unix programs as hot links within an intranet Web page would remove that

burden and provide a quick and easy way to get at Unix data, he said.

"It would make our interface friendlier, since a user wouldn't have to learn all the different commands and icons," said John Cerro, a technical specialist at AT&T Corp.'s information technology services operation in Piscataway, N.J. AT&T uses Hummingbird's Exceed software on 3,000 PCs.

But there are some initial limitations.

## Software

Neither PC-Xware nor Exceed can work through firewalls, which limits their use to internal intranets. Once launched, Unix applications also would have to run separately from a browser in their own X windows. And PC X software is notoriously bandwidth-hungry, which turns off some users.

The X protocol "really requires a lot of bandwidth to blow stuff across to your screen and show the pictures," said Pat Patterson, desktop support manager at a U.S.

telecommunications company. "We use X all the time here, and we're big on Web browsers. But I'd be hesitant to [combine the two technologies] until the performance was a little better."

These limitations are supposed to be addressed by Broadway, the next version of the X Window standard that is due to be released to vendors late this year.

Two key pieces are firewall support and a low-bandwidth option that supports speeds of less than 10M byte/sec.

One caveat, though, is that the X Consortium, which developed Broadway, plans to roll it out of X Window ownership to The Open Group in Cambridge, Mass.

The X Consortium still promises to deliver Broadway as planned, but the impending takeover "has raised more questions than there were before," said Clive Proulx, marketing director at NCD's software unit in Beaverton, Ore.

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## New Products

**Micro Logic Corp.** has introduced Disk Mapper, a software utility.

According to the Hackensack, N.J., company, DiskMapper graphically maps out the information on a hard disk, which lets users delete or compress files they rarely use. It gives users an overview of the hard disk and lets them zoom in and out of subdirectories. It lists the size of every file and subdirectory. /

DiskMapper costs \$50.

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**Millennium System Products, Inc.** and **Orion Network Solutions Ltd.** have announced Orion 3.2 an electronic-mail product for IBM AS/400 systems.

According to the Naples, Fla., company, Orion 3.2 features an Item Control subsystem that lets each installation track activity by item number, originating and destination mailing location, creation and delivery status, and item and status. In Delegate Mail function, lessees specify that all mail be forwarded to designated addresses.

Pricing starts at \$2,000 for 10 mailboxes. Multiuser discounts are available.

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**Institute of Advanced Development Strategies, Inc.** has introduced PDS-Mover.

According to the Aliso Viejo, Calif., company, PDS-Mover lets users transport program executable libraries between IBM MVS systems that use PC media, including floppy disks and CD-ROMs.

The product has two parts: PDS-Mover Server and PDS-Mover Client. The server creates file images, which can be transferred through PC media. It costs \$975. The client converts those file images to their original form. It costs \$25.

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## Groupware

CONTINUED FROM PAGE 49

WebShare and other such products (see chart) let businesses host groupware applications — for discussion forums, purchase order processing or sales lead management, for example — on Web servers. They let users access these applications via Web

browsers. There is still a lot of ground to cover and real-world experience to gain with these Web-based products before users can tell whether they cut the mustard, analysts said. But users are beginning to see some initial success. For example, Simon & Schuster, Inc., in Parsippany, N.J., uses WebShare to provide sales report updates to its 1,200-person sales organization. It also plans to let its 6,500 intranet users access WebShare applications. Robert

Blau, director of Internet architecture and application development at Simon & Schuster, said WebShare's application development environment — which is lacking in many Internet groupware packages — its access control to applications and documents and its ability to attach files to documents played a part in the company's decision to use the product.

Input, a research firm in Mountain View, Calif., predicts that by 2000, users of Inter-

### Sample of Web-based groupware packages

VENDOR	DESCRIPTION
Webshare	Full Web-based groupware environment
Lotus Notes	Web-based discussion forms
Lotus SmartSuite	Web-based simple project management for workgroups
Lotus Notes	Suite of groupware applications distributed by software service providers

net-based groupware will overtake Notes users, 32 million to 26 million. The number of applications available for those products from third-party developers will be the key if Internet groupware vendors' hope to reach their initial expectations, said Brad Miser, an Input analyst.

Rainbow is trying to establish channel relationships with the most readily available developer base: the thousands of Notes developers Lotus has built up over time.

One such firm, Syntexis Corp. in Wakefield, Mass., plans to add WebShare to its list of groupware alternatives but continue its business with Notes.

"WebShare provides groupware that doesn't really rely on infrastructure; it certainly is a definite need in the industry for something like that," said Bahar Utman, president of Syntexis. But Notes will still be needed in other situations, he said.

### Brief

#### Comet landing delayed

With its focus more on UnixWare, SCO, Inc. has postponed plans to revamp its low-end OpenServer operating system. Initial pieces of a promised new version, code-named Comet, were recently introduced as an add-on to OpenServer 5.0. But features such as dual support for Java and increased memory-capabilities will be released in a series of up-dates through the end of the year, SCO officials said.

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## Groupware

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#### **Sample of Web-based groupware packages:**

## A Brilliant Deduction



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**Brief**

**Comsat investing** diversified with its focus more on UnderWire, RCO, Inc., has postponed plans to re-vamp its local and Long-distance operating systems. Initial plans of a streamlined network, code-named Comsat, were recently introduced as an add-on to OpenSwitch 5.0. But features such as built-in support for Java and increased memory capabilities will be released in a series of upgrades through the end of the year, SCO officials said.

COMPUTERWORLD July 22, 1996 (www.computerworld.com)

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# OpenDoc shapes up as worthy platform

By Brian Proffit

**OpenDoc** is something software developers should consider seriously when they reach for tools to create reusable components.

OpenDoc is a framework within which developers can create reusable, interconnecting software parts. The architecture allows end users to connect the parts right on their desktops just easily.

The architecture was developed by Apple Computer, Inc., WordPerfect, Borland International, Inc. and Sun Microsystems, Inc.

OpenDoc is available for IBM's OS/2 and Apple's Mac OS. Versions for IBM's AIX and Microsoft Corp.'s Windows 95 and Windows NT are in beta testing.

Versions of OpenDoc that work with IBM's System Object Model (SOM) are available for OS/2, Windows 3.1, Windows 95, Windows NT and AIX as well as mainframe platforms.

That is important because software written with SOM objects migrates easily to OpenDoc components, called "parts."

We tested OpenDoc using the generally available OS/2 version from IBM and ran it on a 90-MHz

Pentium-based system with 16M bytes of memory and OS/2 Warp Connect. Warp FixPak 17, included on the CD-ROM, is required for the latest level of OpenDoc.

The CD also contains OS/2 runtime elements, including the OpenDoc base, multimedia extensions and sample parts for putting together a financial application, including a bank statement file.

For developers, the CD includes an update to the OS/2 Professional Editor, the OpenDoc Toolkit (with tools such as class libraries, header files and documentation), the SOM Developer's Kit and the SOM Workgroup Enabler.



It also includes an object-oriented enhancement to the Rexx scripting language called Olexx that serves as the Open Scripting Architecture (OSA) language for OS/2.

There is also an OSA Resource Editor with templates for new

scripts and a library of standard suites. We were easily able to develop Olexx scripts by using the Script Editor.

A ParMeister code generator is included, but it requires a dynamic link module that isn't installed.

## Ease of use:

For developers, OpenDoc provides a set of application programming interfaces (APIs) that make development of interoperable, reusable software components relatively painless.

Those APIs already have been incorporated into several products and bring OpenDoc development to C++, Cobol, Smalltalk, Basic and other languages.

With OpenDoc, developers don't need to constantly reinvent the wheel. Using the sample parts included, we put together an application that did text processing, displayed push buttons and responded to clicks on them. The product even allowed the user to do some simple two-dimensional drawing in the window — all without writing a single line of code.

For more complex functions, the tool kits allow development of custom OpenDoc parts. That is

Overall rating:	
<b>B</b>	

**OpenDoc is available for IBM's OS/2 and Apple's Mac OS. Versions for IBM's AIX and Microsoft's Windows 95 and Windows NT are in beta testing.**

more complex than writing a stand-alone program because you have to allow for all the requests that may come from the user and from other parts.

But those experienced with event-oriented programming or graphical user interfaces will be used to that. Object-oriented programming experience is another plus because OpenDoc is essentially object-oriented, programming taken to a new level.

Each part is a complex object,

with all its methods contained within the object (or for the OpenDoc runtime modules). And OpenDoc parts can be any size or shape, which creates great flexibility. The C++ code samples help a lot, and once you have basic parts in place, combining them to provide complete applications is a snap.

Information systems departments can capitalize on this to roll out custom solutions for their users without intensive programming or expensive contracts with vendors. Many large corporations such as Comshare Engle Co. and Andersen Corp. have already embraced OpenDoc to help ease their software development, rollout and support burdens.

OpenDoc for Windows supports OLE. An OpenDoc container can hold OLE objects, and OLE applications can contain OpenDoc parts. We found that OpenDoc actually provides an easier path for developing OLE-compliant applications. Microsoft has publicly stated that OpenDoc applications meet the OLE requirement for Windows 95 certification.

Proffit is a senior contributing editor and researcher at PC Lab, a test lab in Torrance, Calif.

# Tool sets, updates help make Big Software even bigger

## Apps can aid large-scale development

By Frank Hayes

**Big Software** is alive and well.

PC-based client/server development tools — including Microsoft Corp.'s Visual Basic and Powersoft Corp.'s PowerBuilder — have been getting the headlines because they let corporate developers quickly create applications that once would have required more time to code on a mainframe.

But they haven't displaced enterprise-class applications, according to users.

"It's a matter of using the right tool for the job," said Paul Speranza, a systems engineer at Blue Cross/Blue Shield of Connecticut in North Haven.

"A big application is going to be big whether it's on a mainframe or on Unix servers," Speranza said.

An enterprise application covers the whole gamut of your busi-

ness, and it supports a large user base and a very large database. That kind of application isn't going away," said Mike Shaffer, director of technology and development at Amaya Managed Care Systems, Inc. in Rockville, Md.

### PC tool sets

As a result, developers are increasingly turning to tool sets designed for large-scale development. Andersen Consulting in Chicago and Sapiens International, Inc. in Research Triangle Park, N.C., in recent weeks have started to ship new versions of their tool sets for building enterprise-scale applications.

Andersen's Foundation for Cooperative Processing and Sapiens' ObjectPost! let developers use popular PC development tools to create front ends to large-scale applications.

### Updated tools for enterprise-class software

VENDOR/ TOOL	DEVELOPMENT ENVIRONMENT	DEPLOYMENT SERVER PLATFORM	DEPLOYMENT CLIENT PLATFORM	STARTING PRICE
Andersen Consulting	Windows 3.1, Windows 95, OS/2, AIX, Unix	SparcStation 2, SparcStation 3, SparcStation 4, SparcStation 5, SparcStation 6, SparcStation 7, SparcStation 8, SparcStation 9, SparcStation 10, SparcStation 11, SparcStation 12, SparcStation 13, SparcStation 14, SparcStation 15, SparcStation 16, SparcStation 17, SparcStation 18, SparcStation 19, SparcStation 20, SparcStation 21, SparcStation 22, SparcStation 23, SparcStation 24, SparcStation 25, SparcStation 26, SparcStation 27, SparcStation 28, SparcStation 29, SparcStation 30, SparcStation 31, SparcStation 32, SparcStation 33, SparcStation 34, SparcStation 35, SparcStation 36, SparcStation 37, SparcStation 38, SparcStation 39, SparcStation 40, SparcStation 41, SparcStation 42, SparcStation 43, SparcStation 44, SparcStation 45, SparcStation 46, SparcStation 47, SparcStation 48, SparcStation 49, SparcStation 50, SparcStation 51, SparcStation 52, SparcStation 53, SparcStation 54, SparcStation 55, SparcStation 56, SparcStation 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I thought my  
job description  
said  
MIS manager  
not

# test pilot?"

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# The Enterprise Network

## Firm sings Sonet praise

By Kim Girard

**A** tag-of-war can break out among physicians after a United Health-affiliated technician takes a patient's X-ray.

The primary care physician wants it. So do the specialist and the radiologist.

"The issue is access to the information," said Doug Moard, a United Health physician at the Family Doctors clinic in Kimberly, Wis. "A lot of the clinicians want to see the image themselves and make their own judgment."

Soon, health care providers on United Health's network will be able to share patient records and images

via Asynchronous Transfer Mode (ATM) packet-switching technology over a Synchronous Optical Network (Sonet) ring.

The bidirectional Sonet network enhances United Health's private-line services and offers increased network reliability, redundancy and restoration capabilities for voice, video and data.

Rick Rohde, United Health's network administrator, said no other technology rivals Sonet's ability to automatically detect breaks in fiber lines and restore traffic in 50 milliseconds to maintain a continuous link.

"If there's a cut on a link, the network is smart enough to say, 'I know where my backup is,'" said Tom Jenkins, a broadband consultant at TeleChoice, Inc. in

Verona, N.J. The Sonet ring connects United Health headquarters to its two hospitals: Appleton Medical Center in Appleton, Wis., and Theda Clark Medical Center in Neenah, Wis. About 20 physicians' offices throughout northeast Wisconsin are also linked to the network via Integrated Services Digital Network (ISDN) and frame relay.

### Cost factors

The Sonet ring costs Amertech Corp. about \$13,000 per month for the tariffed Sonet service. That cost is about equal to what it paid for ISDN, frame relay, T3 and voice channels that ride on the Sonet, Rohde said. "There was no monthly increase to move to Sonet," he said. "The only cost for the migration was to pay for routers and other ATM-enabled equipment, he said.

Sonet also helped offset the impact of a recent file server upgrade to Novell, Inc.'s NetWare 4.1 and a large increase in the number of PCs at its three main sites.

### Synchronous Optical Network (Sonet)

A set of standards for transmitting data over fiber-optic cable at speeds of 51.84M b/sec. and faster.

A Sonet ring is for networks that have high traffic that requires huge amounts of bandwidth.

If you want T3 (45M b/sec.) or OC-1 (52M b/sec.) speeds, you may want to consider Sonet.

Increased network reliability and restoration capabilities down to the millisecond level.

"The traffic between campuses dramatically increased," Rohde said. "We needed more bandwidth."

In the future, United Health can easily move from current T3 (45M b/sec.) lines to OC3 (155M b/sec.), OC12 (620M b/sec.) or even higher-speed lines if necessary, without having to add extra equipment, Rohde said. United Health will use ATM in the wide-area network July 27, replacing bridges with Cisco Systems, Inc. routers and ATM switches that will interface on the Sonet.

The network at first will be used for voice traffic and to transfer patient and administrative records. Later, magnetic resonance images (MRI) also will move on the network. So, a physician at Theda Clark and a specialist at Appleton Medical 9 miles away will be able to use MRI equipment to simultaneously view an image, which will cut diagnosis time, Rohde said.

ATM applications haven't evolved enough to bring the technology to the desktop, but Rohde said United Health will be prepared if they do.

"We see this [upgrade] as taking us into the year 2000 easily without having to do a major upgrade to that piece of our network," he said.

## Rmon standard stepping up

New spec provides application-level info across segments

By Patrick Dryden

An impending standard for monitoring application traffic across client/server networks should help administrators maintain vital business functions, just connections.

A brand-new form of the Remote Monitoring (Rmon) specification is expected to significantly extend the ability of network managers to watch the performance of their networks.

Rmon remains a valuable spot troubleshooting tool, but Rmon 2 will let managers track overall network service.

The original Rmon standard, now supported by every internetworking and management vendor, helps collect and analyze basic traffic flow through individual network segments.

Rmon 2 can show activity by applications and between clients and servers across multiple segments of the network.

"With Rmon watching utilization in our switch-

es, we know immediately if problems pop up. Rmon 2 would help us sort out contention to see who's monopolizing the pipe," said Jim Ryan, network planner at The University of Massachusetts Medical Center in Worcester, Mass.

Ron Weil, director of technical lead in the network performance and capacity planning group at Charles Schwab & Co. in San Francisco, said current Rmon tools can deliver good information on overall resource usage. "But we don't know what's driving the usage. Having application-level data will help us understand all the pieces," he said.

"Rmon 2 is part of the trend toward making data networks more of a utility, like a telephone network," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif.

"Network managers want to spend more time managing usage, not plumbing. Rmon 2 is a major step," Howard said.

### Standardization needed

The market for Rmon products blossomed last year to \$385 million, outstripping network management platforms at \$197 million and element-level management tools at \$155 million, according to International Data Corp. in Framingham, Mass.

Rmon vendors such as Concord Communications, Inc., Frontier Software Development, Inc. and Hewlett-Packard Co. extended the original technology in their own ways to let users monitor traffic at the network and application layers.

Such proprietary tools have helped several organizations already. Standardization of Rmon 2 will open the technology to many more that need it.

Standard data formats and collection methods of assurance that users won't have to change home-grown management applications and also reduce the impact if one vendor goes away, Weil said.

Some government clients of Network Performance Corp. put off evaluating the new Rmon until

Rmon standard, page 61

Became Internet Engineering Task Force draft standard in December 1994

Provides information about traffic on one segment at the physical and data link levels

Shows current or historical statistics such as utilization or errors and enables remote protocol analysis

Should match draft-standard status this month

Provides information about traffic beyond router boundaries in the network and application levels

Shows differences in activity by application type across the network



## The Enterprise Network

# IBM's OS/2 Warp Server 4.0

Four IS managers love improved installation, administration and add-ons.

By Kevin Burden

**T**o know IBM's OS/2 Warp Server is to love it. At least that is what four users indicated in recent interviews with Computerworld.

Why are they satisfied? Most, they said, because Warp Server 4.0 is easier to install than its predecessor,

LAN Server. Administration is as simple as drag and drop, and many of LAN Server's add-on products, such as SystemView, are integrated in one package. And the only crashes the users suffered were caused by hardware failures.

Still, nothing is perfect. Warp Server 4.0's file system doesn't support journals, and its remote access program doesn't support Unix or Windows 95 clients. And, "it only runs on Intel platforms, and I really need a RISC-compatible version," one user said.

Computerworld interviewed four managers who have several months' experience with Warp Server 4.0. They rated the release, which went into general availability in May, on a five-point scale (A = very good, B = good, C = average, D = poor, E = very poor). Their grades appear in the following order:

• Bob Sanders, director of technical services at Rabbit Enterprise in Peabody, Mass.

• Josh Airlall, systems analyst at Cincinnati Bell Information Systems in Cincinnati.

• John Robinson, systems manager at South Carolina Department of Parks and Recreation in Columbia, S.C.

• Bill Howey, senior systems consultant at AVCO Financial Services Corp. in Irvin, Calif.

### Installation



"Warp Server's installation is nothing like LAN Server," Sanders said. That could be among the highest of compliments, judging from what the other evaluators had to say about LAN Server.

"LAN Server was installed in pieces and was never this seamless or easy," Robinson said. "Now you just answer about a dozen questions [in Warp Server 4.0], go to lunch, come back, and it's running."

But installation isn't foolproof. Warp Server 4.0 includes many drivers, but not everything users may need. The four users said all hardware was detected, but Warp Server 4.0 didn't always

configure it correctly. "It insisted on giving the wrong interrupt and no shared memory to one of our systems with an IBM Ethernet ISA adapter," said Sanders, who manually corrected the problem.

### Ease of use



"The best thing Warp Server has done for me is take away all my TCP/IP headaches," Robinson said. Version 4.0 includes two utilities for managing TCP/IP, Dynamic Host Configuration Protocol (DHCP) and Dynamic Domain Name System (DDNS). Robinson configured his server using DHCP so it assigns TCP/IP addresses to systems as they boot up.

The DDNS associates IP addresses with corresponding English names, which lets remote users access any system, regardless of the IP address. "This way the DHCP client comes up on the network, rents its IP address, and we're off and running," Robinson said.

Utilities aside, Warp's object-oriented administration tops the reasons why OS/2 loyalists consistently say Warp and Warp Server are easier to use than

Windows and Windows NT. "If you want to give 100 users access to a printer, [just] highlight them, then drag and drop them on to the printer's icon. It's that easy," Airlall said. He said he prefers to stay near NT's command-line administration. "You can also click the right mouse button on an object for a pop-up menu of options," Airlall said.

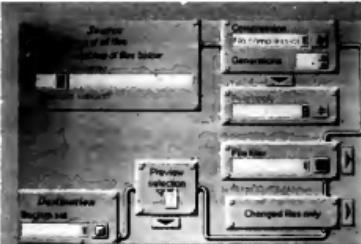
But Warp Server 4.0 doesn't include Network File Server or X Windows System. "It would be a lot easier for our Unix people if they were included," Sanders said. X Windows is the standard Unix graphical user interface.

The users interviewed are also looking for changes in the Microsoft Corp.-written high-performance file system (HPFS). Some want it yanked because it is from Microsoft; others want it replaced with a journaling file system (see "IBM responds" below).

### Network and systems management



The real jewels of Version 4.0 are the newly integrated products such as OS/2 Warp 3, LAN Distance for remote access



### IBM responds

Answers from Gary Hunt, IBM's technical lead for OS/2 Warp Server:

#### File System

"HPFS/36 originated from Microsoft, but we haven't taken any code from there since 1990. We now have intellectual ownership of the technology. We are looking into journaling as a technology for Warp Server." ■

#### Chkdsk

"We realize waiting through all the directory trees in a large partition can take a long time with the [IBM] CHDK36 program. We are looking for ways to speed it up but don't have any deliverable changes." ■

and SystemView for systems management — previously all separate add-ins.

SystemView's scheduler flawlessly ran software inventory and distribution utilities and system backups after hours, according to the evaluators. "Best of all, they're automated. You don't have to write scripts for these functions [as in LAN Server]," Robinson said.

### Performance



"When you can hang as many as 1,000 clients off the [advanced edition server], it's hard to complain," Airlall said. "We've easily connected 800 users concurrently" when the server was used for print-and-file sharing only. As an application server, concurrent-user counts top out at about 200 to 200. But Airlall claimed that with enough memory and the maximum eight Token Ring cards installed, he has successfully run 1,000 concurrent users. The basic edition supports about 120 clients, though Airlall said it can run 300 to 400.

Warp Server 4.0's multitasking capabilities are smooth and time-slice very nicely," Sanders said. The lack of symmetrical multiprocessing (SMP) support disappointed a couple of evaluators, but IBM expects to offer a free SMP upgrade later this year.

"The one beef I have is with the CHDK36 program, which is still a 16-bit program," Robinson said. Until IBM writes a 32-bit version, "I have to keep drive volumes low so partitions are manageable" (see "IBM responds").

### Reliability



"I wake up confident every morning knowing everything is going to be running," said Robinson, who blames his only server crash on a bad power supply.

This level of reliability, coupled with Warp Server's SafeSound backup and recovery system, is why the evaluators entrust their critical applications to Warp Server 4.0. Airlall said his environment, which includes a variety of client/server operating systems, runs seamlessly. "As a client, you can't tell if you're talking to the Warp Server or the Novell server," he said. ■

Burke is Computerworld's senior research Scorecard/Firing Line.

# NetWare crash utility enhanced

Vendor automates file server recovery

By Laura DiDio

Alexander LAN, Inc. recently released a new version of its NetWare file server crash utility that automates the recovery process and restores server functions within minutes.

The Alexander LAN Server Protection Kit (SPK) 2.0 is a set of three applications that run on top of NetWare.

The applications were designed "to take the pain and guesswork out of what's involved in a NetWare file crash, locate the problem and fix it quickly," said Wayne Stein, project manager at Electronic Data Systems Corp. in Warren, Mich.

#### Helpful diagnostics

Stein said the EDNA SPK utility could be particularly helpful because NetWare is a complex, network operating system, and EDNA often lacks the on-site technical expertise to quickly locate the source of a server crash.

Mark Sayer, a network systems engineer at Heidelberg Harris, Inc., a manufacturer of printing presses, in Dover, N.H., said he is eager to investigate the utility because Heidelberg Harris' only method of crash recovery for its network of 35 NetWare file servers and 1,000 users is time-consuming manual repair.

"The Alexander LAN SPK can potentially give us all the pertinent information so we can go to our vendors armed with information and tell them what to fix," Sayer said. "I also like the idea that we only have to devote one person to spend minutes [instead of one hour] to get us up and running." The product is shipping now and costs \$698.



**Edna SPK 2.0**  
Wayne Stein: Alexander LAN's SPK 2.0 offers his firm an extra measure of protection

Peskin said the Alexander LAN kit comprises the following three NetWare Loadable Modules (NLMs):

- The Emergency Diagnostics for the NetWare Administrator (EDNA), an automated server-based utility that gathers diagnostics and writes a crash file to record events. EDNA can automatically reboot the NetWare server by running the Vrepair tool in NetWare.
- The Debugger Extender NLM, which extends the debugging capabilities of NetWare.
- The NetCheck NLM, a diagnostic tool that tracks the source of server crashes.

The three modules work together to prevent and recover from server crashes.

Users who have anticipated the forthcoming Novell, Inc. Green

## Briefs

**No more network surprises**  
Instead of spending time to extend network management to nights and weekends, administrators can let NetSolve, Inc. take over. The company's new On-Hour Hours Monitoring service complements On-Hour operators at organizations. The cost is \$7,200 per month for watching and fixing a wide-area network with at least 100 routers. NetSolve handles this part-time duty from the operations center at its headquarters in Austin, Texas, where it provides full-time management, called ProWatch IV, for smaller networks.

#### Secure SNMP for OpenView

By the end of this month, SNMP Research International, Inc., in Knoxville, Tenn., will offer network administrators a tool kit that brings security and remote configuration to the leading network's management platform, the SNMP.

The Two-Security suite was developed with Hewlett-Packard Co. The product supports three versions of the Simple Network Management Protocol and with HP's OpenView Network Node Manager L1. The software costs \$2,995, adds two million links at transmission speeds equal to T1 lines, over links separated by as much as two miles. GTC Telecom said the product is aimed at campus environments, large buildings and will make communications between buildings and floors possible without the high cost of laying cables. AirKey Bridge adds the exchange of network topology information that passes among distributed management servers, and it automates the security configuration process.

#### NetWare server automation

GTC Telecom, Inc., in Scottsdale, Ariz., recently released software that automates the management of NetWare 4.x servers from Novell, Inc.

Inc. The AutoAdministrator module for Novell's Windows-based NWAdmin tool can schedule and execute any command that an administrator would routinely run at the server console. It works with Novell Directory Services and security and can control NetWare Loadable Modules. The price ranges from \$89 for one server to \$2,499 for 100 servers.

#### IBM in the middle

IBM has announced some long-awaited additions to its MQSeries message-oriented middleware. But one key piece — a full implementation for Windows 3.1 and Windows 85 — still won't ship until late September, as expected (ICW, June 3). The Windows release is central to IBM's plans for supporting mobile users with MQSeries. IBM also introduced a bridge that directly connects MQSeries to its IMS mainframe transaction software.

#### Wireless bridging

GTC Telecom, Inc., in San Jose, Calif., has released a wireless Ethernet bridge. AirKey Bridge delivers wireless data links at transmission speeds equal to T1 lines, over links separated by as much as two miles. GTC Telecom said the product is aimed at campus environments, large buildings and will make communications between buildings and floors possible without the high cost of laying cables. AirKey Bridge will cost \$3,500 and will support 64 users or more.

#### Troll to manage

**PowerBuilder**  
Troll's Troll Manager management division plans to deliver an application management tool that fits in to PowerSoft Corp.'s PowerBuilder application development tools. The Troll Manager for Applications will be bundled with Power-

Builder 5.0, which is due later this month.

#### Life in the FastLane

FastLane Technologies, Inc.'s Fast 5.0 network management utility recently received certification to run with Microsoft Corp.'s BackOffice suite of applications.

#### NetWare Client 32 ships

Novell, Inc., recently started to ship its 23-bit requester software, NetWare Client 32 for DOS/Windows. The software gives 16-bit DOS and Windows 3.1 PC users full 23-bit access to all NetWare services, including Novell Directory Services. Businesses can also deploy the NetWare Client 32 requester to simultaneously access multiple file servers, printers and application resources. The software also includes the NetWare Application Launcher, a management utility that gives end users direct access to network applications. NetWare Client 32 for DOS/Windows is available now. Users can download the software for free from Novell's Web page.

#### HP releases new SNA hooks

Hewlett-Packard Co. has introduced new versions of its SNA connectivity products for linking HP 9000 Unix servers to IBM mainframes and AS/400s. The HP UX/SNAPload line has expanded scalability, a graphical user interface and support for IBM's Advanced Peer-to-Peer Networking implementation of SNA. This allows direct ties between different servers on a network. Prices start at \$3,550. HP will also integrate Cisco Systems, Inc.'s switched-layer technology into its SNA lineup.

## New Products

**Interphase Corp.** has announced 5526 Fibre Channel Adapter.

According to the Dallas company, the adapter provides single-port connectivity from a Peripheral Component Interconnect slot. It supports 10/25M, 531M- and 266M bit/sec. link speeds. Fibre Channel Class 1, 2 and 3 services; Fibre Channel Arbitrated Loop; Point-to-Point; and cross-switched

topology. It also supports up to 16,384 concurrent SCSI I/O operations.

The product costs \$1,995. It comes with drivers for Windows NT and Novell, Inc. NetWare 4.x.

► **Interphase**  
(214) 654-5000  
[www.interphase.com](http://www.interphase.com)

**Systems and Synchronous, Inc.** has unveiled LANPanther Remote.

According to the Naperville, Ill., company, LANPanther Remote lets information systems

managers migrate older generation IBM PU 2.0 modules that use SNA or Binary Synchronous Communications (BSC) protocols to the LAN. It was designed for IS managers and network administrators who need SNA and BSC access via TCP/IP from small and regional offices.

LANPanther Remote supports a single PU 2.0 module with a maximum of 128 concurrent T1/DS3/E3 sessions. Pricing starts at \$6,500.

► **Systems and Synchronous**  
(708) 505-4517  
[www.mic.com](http://www.mic.com)

[www.computerworld.com](http://www.computerworld.com)

JULY 22, 1996 COMPUTE WORLD

## Rmon standard stepping up

CONTINUED FROM PAGE 59

The standard was close enough for vendors to demonstrate compliance, said Andrew Jaworski, president of the consultancy in Dunkirk, Md.

#### More support

Vendors have supplied many Rmon 2 capabilities with their private extensions, but now they will be under pressure to support all

of them, Jaworski said.

He said he hopes to see broad standardization among products that are currently proprietary. Then one vendor's software can configure other vendors' embedded agents and probe devices, and users will get broader control over the statistics they need.

Vendors said they plan to add Rmon 2 support through the rest of the year and test product interoperability in September.

—Laurie M. Johnson

Contributing writer

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from informing you that reliable Acer  
components are used by many of the  
best-known computer companies.**

**(Oops.)**



**pentium**



**Windows 95**





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**FUJITSU**

Templar 2.0 rings up sales over the 'net. 66



#### Olympics online

Chances are good that heavy traffic will shut you out of the official 1996 Centennial Olympic Games World wide Web site ([www.olympics.com](http://www.olympics.com)) at least once. It happened to us last week, before the games even began, but breathe easy. Plenty of unofficial sites offer armchair Olympians a taste of the fun.

**Yahoo's** Screenshot ([sports.yahoo.com/](http://sports.yahoo.com/)) posts regularly updated headlines on who is winning what. Plenty of other news outlets, including *The Boston Globe*, *The Chicago Tribune*, *The Washington Post*, *Life* magazine, *Sports Illustrated* and CNN, also offer event results.

**NBC Sports** ([www.nbc.com/sports](http://www.nbc.com/sports)) has lots to choose from while you're waiting for headlines to roll in. Check out a roster of U.S. athletes and an online store at which to shop, shop, shop. Of course, there's a TV schedule, for your old-fashioned types. Play an E-mail trivia game for a chance at \$1000 in Olympic paraphernalia.

**The Atlanta Journal-Constitution**, along with two Web consulting firms, has a few neat tricks at [www.ajc.com/games.com](http://www.ajc.com/games.com). Check out scoring charts at the various venues and get real-time information on traffic conditions in the city. Chat with fellow fans or fly through a virtual reality tour of the Olympic ring.

**It's** but David Lethman Monkey-Camp, but Park Camp Live ([www.athens-olympics.com](http://www.athens-olympics.com)), hosted by AT&T, offers live footage of the main competition venue downtown. Recorded video of the Olympic Village and other sites is also available.

**Go to** [www.womenssports.com/olympics/](http://www.womenssports.com/olympics/) for information on female athletes from all countries competing in everything from archery to yachting. The site also has a section on the history of women in the Olympics.

**If** you're in Atlanta and you're interested, find out why at [www.athens.com/venues.html](http://www.athens.com/venues.html). The site, hosted by an allergy pill company, posts daily pollen count updates for Atlanta and nearby areas.

— Kim S. Nash

By Kim S. Nash

**E**ver wonder what das-  
tardly things your users  
are up to online?

A handful of utilities  
that will ship this sum-  
mer may help informa-  
tion systems managers find out.

Whereas some tools can block  
access to certain Internet locations or

**Web monitoring**  
services, a crop  
unveiled recently  
sims to help  
ISPs understand  
the ebb and flow

of internal networks.

As users increasingly demand  
Internet-specific network monitoring  
tools, many vendors have rushed to  
build them. But that isn't necessarily  
good news, said Carl Lehman,  
an analyst at Meta Group, Inc. in  
Boston.

"It's hard to say which vendors are  
going to stick around and which will  
be overcome" by the competitive

New tools track how your users use the Internet

# What are they up to?

crush, he said. Users should look hard at what kind of network traffic  
questions they want answered before  
buying "just anything," he said.

Tawdil Networking Technologies,  
Inc. in Toronto and Net.Genesis Corp.  
in Cambridge, Mass., hope to differentiate  
themselves with tools that  
demonstrate the specifics of World  
Wide Web use.

The Tawdil product tracks data  
such as which Web pages users  
access, the path they take to get there  
and how much electronic mail they  
send and receive. Tawdil's \$99 Inter-  
net SnapShot, due next month, isn't a  
Big Brother tool, company officials  
said. It doesn't peek at the content of  
the data that users access but simply  
Tools, page 66

## Don't get caught in the Internet collapse

Charles Babcock

I'm a Metcalfe. Or is it a Metcalfer?

Bob Metcalfe, author of *InfoWorld's* From the Ether column, has received a stream of comment and criticism for his prediction that the Internet will collapse sometime this year.

He first made his prognosis, in jest, last Dec. 4. It seemed clear to me he was just having fun, but his comment stirred up a storm of protest. Metcalfe then began repeating it regularly, paying in-

creasing attention to the facts. After listening to the many explanations of why he is wrong, I think he's on to something.

The Internet was designed for the exchange of ideas and research. It's become a bulletin board for millions of individuals and organizations. Now businesses plan to use it as the free interconnection for interstate banking and electronic commerce. And some individuals hope to substitute its service for their monthly phone charges.

The Internet can't take everything that's being thrown at it, so parts of it are going to give out under the strain. Internet pioneer Vinton Cerf is skep-

tical that his company, Internet backbone supplier MCI, will be able to expand capacity as quickly as needed beyond next March. He pegs the 'net's growth at 2000 a year.

My Unix friends tell me they have heard these warnings before, and yet the 'net keeps growing. They tell me the 'net is self-governing. As traffic grows, the network slows and routes traffic to underutilized lines. Some users shift to off-peak hours. Bandwidth is then added to accommodate the new sites and people coming online.

This process works, up to a point. But somewhere down the road it will hit a simple routing problem. The traffic generated has to be directed around the 'net, even if carriers find lots of cheap fiber-optic bandwidth to carry it. The carriers will have to add a lot of routing power to keep up with 300% growth, and they'll have to add it in the right places. I don't think we have the mechanics in place to do this for a large, unplanned network.

I expect the Internet to sag, brown out, slow to intolerable response times and suffer spot outages. We Metcalfians don't take Bob literally on the "collapse" stuff. He's the inventor of collision storms — well, actually, Metcalfe invented Ethernet, which has collision storms

— no he knows a message jam-up when he sees one coming.

Maging Internet is bad for business if your organization uses it as an extension of the corporate network. Your Internet application server will be up and running, but response times could become unpredictable! Your service may not even be available when most customers want to access it.

After listening to the many explanations of why Metcalfe is wrong, I think he's on to something

Your competition sees the 'net, so you must also. But over the next 18 months, exactly how much time will you get to spend on the 'net with your customers is an open question.

The traffic issues will eventually get sorted out. But in the meantime, the Metcalfians will be proved right.

Babcock is Computerworld's technical editor. His Internet address is charles\_babcock@cw.com.

## The Internet

### How EDI over the Internet works



# Templar 2.0 rings up sales over the 'net

By Mitch Wagner

Premenos Corp. in Concord, Calif., this week will ship a version of its electronic data interchange (EDI) product designed to allow EDI transactions through a direct Internet connection.

Templar 2.0 was designed to give two or more companies links to one another's information infrastructure so they can swap purchase orders, invoices, health claims and other essential business information.

The first version of Templar, introduced last year, used electronic mail as a transport for EDI data. But Templar found Internet mail to be unsuitable for transferring large messages. The new version of the software includes support for direct TCP/IP connections between Templar and any Internet-connected system. It will also connect to Hypertext Transfer Protocol. It can create a flat file of EDI data for use with a third-party transportation mechanism to link with existing EDI applications.

#### A low-cost VAN

The Premenos product uses the Internet as an inexpensive replacement for private networks, also called value-added networks (VAN), over which most EDI com-

nections are made.

VAN vendors, including IBM's Advanced Business Unit and General Electric Information Services, can charge \$150 per hour or more. Premenos officials estimate the cost of an Internet connection to be \$1 per hour.

But EDI users might be reluctant to abandon VANs. Despite the expense, EDI users value the security, accountability and reliability VANs offer.



Templar 2.0 supports direct TCP/IP connections

"One of the problems with the Internet is, if there's a problem, who do you call?" says Tom Morris, who heads up EDI services at Bumble Bee Seafoods, Inc. in San Diego. "If I send a document, and it doesn't get somewhere, how do I trace that? If my partner is on a small Internet service provider, do I call my ISP? Do I call the partner?"

Nonetheless, Mongeon predicted the problems with EDI

over the Internet will be solved over the year.

Templar was also designed to function as a back end for World Wide Web sites to allow corporate users to keep track of sales, billing and other functions.

"Cost is a big issue for us," said Sarah Steinberg, a software engineer at the Internet Shopping Network in Palo Alto, Calif., which sells consumer merchandise online at [www.internetshopping.com](http://www.internetshopping.com).

"It's pretty expensive to use a value-added network, and the Internet is virtually free." The shopping network processes sales through an AT&T Corp. VAN but plans to replace that arrangement with a Templan system.

But what seems cheap to EDI users might seem expensive to Internet users. The Premenos software costs \$19,900 for a server that would let a company connect with as many as 20 trading partners; clients for each trading partner would cost \$449 each. For 20 or fewer trading partners, the server version is \$6,990.

The Templan client/server software runs on Sun Microsystems, Inc.'s SPARC, Hewlett-Packard Co.'s 9000, IBM's RS/6000 and 16-bit Windows, A32-bit Windows version for Windows NT is due later this year.

### Brief

#### Enhanced Web tool

Gentient Technologies, Inc. and Spider Technologies,

Inc. have struck a deal to add data reliability and security to Spider's World Wide Web design tools. Spider in Menlo Park, Calif., and Gradient in Marlboro, Mass., will integrate Spider's NetDynamics with

Gradient's WebCrusader server software, which is based on Open Group's Distributed Computing Environment. Gradient will sell the combination later this year. Pricing hasn't been set.

## Books for aspiring Web publishers

**Netscape & HTML Explorer**, by Urban A. Lejkens; Coriolis Group Books, Scottsdale, Ariz.; 666 pages; \$39.99 (paperback)



This combination user's manual and programmer's guide is a bit of an odd duck among the World Wide Web's streetwise books — it hasn't been updated. Most seem to concentrate on how to build and maintain Web pages, but they virtually ignore the technology used to view them.

This guide, aimed at the Web-savvy user, fills almost a third of its heavily illustrated pages with detailed instructions on high-level functions of Netscape Communications Corp.'s Navigator browser. Including tips such as how to edit a netscape.ini file.

The instruction is useful, but, as the foreword acknowledges, new versions of Navigator hit the Web so frequently, no publication on paper can possibly keep up with all the latest features.

The rest is a fairly standard tutorial on HyperText Markup Lan-

**Beyond HTML** is exactly what it says: a guide for webmasters who want to move beyond the standard tricks of the Web-building trade and into cybercity.

It covers how to use Adobe Systems, Inc. Acrobat and other formats that could act as alternatives to HTML. Then it moves on to Java coding, Virtual Reality Modeling Language three-dimensional programming and advanced multimedia technology, including Macromedia, Inc.'s Shockwave animation; and real-time audio and video-streaming technologies. — Kevin Fagarty

## Tools track Internet use

CONTINUED FROM PAGE 65

records how and when network resources are used.

One early user of SnapShot discovered things about his network he wouldn't otherwise have known.

When CallPro Canada, Inc. in Toronto gave 20 of its 60 employees Netscape Communications Corp. browsers six months ago, the voice processing firm saw its network slow down.

"We just realized it was because people were out there browsing the Web, discovering all kinds of new information," said Frank Terzigni, vice president of technology at CallPro.

Rather, the slowdowns came when administrators downloaded file server content to local clients — work that was completely unrelated to the Internet.

SnapShot tracks use of the Web, file transfer protocol (FTP) sites and E-mail. Other products monitor only the Web's Hypertext Transport Protocol.

Net.Genesis, meanwhile, recently introduced a PC version of its Unix-based NetAnalysis 1.0

### Internet eyes

What you want in software that watches Internet use

**Cryptical user interface to shorten learning curve**

**Ability to monitor FTP, Usenet and Internet services other than the Web**

**Build a database to keep usage histories**

**Customizable reports that let you set variables such as time, user and server**

**Option to create charts and graphs based on collected data**

Web management tool.

**NetAnalysis Desktop Edition 1.1** can measure the number of hits to a site or individual page for any period of time and identify users by domain name. It comes with a PC-based database to keep usage histories.

The product is due late this month for Windows NT and Windows 95. It costs \$295 until Sept. 30, after which it costs \$495.

## The Internet

### New Products

**Hybrid Networks, Inc.** has announced Hybrid Access System 2000, a wireless point-of-presence (POP) server.

According to the Cupertino, Calif., company, Hybrid Access System 2000 lets a network operator send data to a subscriber's computer at 10M bit/sec via a one-way wireless system. Return channels can be run over Internet connections. In operation, the wireless POP server is centrally located in a computer room or networking hub connected to the Internet backbone. The server typically is linked through point-to-point microwave to the operator's various wireless transmitter locations.

Pricing for system configurations starts at \$50,000.

► **Hybrid Networks**  
(408) 725-3250  
[www.hybrid.com](http://www.hybrid.com)

**Performance Technology**, a subsidiary of Bay Networks, Inc., has announced Instant Internet 3.1.

According to the San Antonio company, instant Internet is an all-in-one-box LAN-based Internet access product that will let Novell, Inc. NetWare-equipped sites and branch offices connect to the Internet. It has a 32-bit Winsock that lets Windows 95 and NetWare clients run applications that include Netscape Communications Corp.'s Navigator, Microsoft Corp.'s Internet Explorer and Java.

Instant Internet lets administrators filter and control access to newsgroups and features incoming services access. It comes with built-in Serial Line Internet Protocol and Point-to-Point Protocol dial-up facilities or with built-in Integrated Services Digital Network. It supports external Internet protocol routers or dedicated, digital circuits and Ethernet, Arnet or Token Ring networks.

Pricing starts at \$3,495.  
► **Performance Technology**  
(210) 979-2000  
[www.perfect.com](http://www.perfect.com)

**Great Lakes Area Commercial Internet, Inc.** has announced GLACI SecurityServ.

According to the Milwaukee company, GLACI SecurityServ is a World Wide Web server for Novell, Inc.'s NetWare platform that can do more. It was designed to help users transform Novell file servers into a commercial-grade Web server.

GLACI SecurityServ lets users manage server and network resources and can be used to manage user accounts, access directory service information, examine network and server performance statistics and manage print queues. It loads as a standard NetWare Loadable Module on NetWare operating system Versions 3.11, 3.12 or 4.x.

Pricing starts at \$975.  
► **Great Lakes Area Commercial Internet**  
(414) 475-6368  
[www.gaci.com](http://www.gaci.com)

pany, CrossLAN Exchange was designed to attach strength-strength corporate intranets to a company's network infrastructure by letting users transparently add high-speed access to intranet servers while preserving the network.

CrossLAN Exchange provides access for users of Token Ring and Ethernet LANs and for remote users who are connected to the original network through wide-area networks or the Internet. It features sup-

port for LAN emulation, virtual LANs, switched virtual circuits, conventional and ATM routing, translation and adaptation services, high availability and reliability, firewalls and network management capabilities.

Pricing for CrossLAN Exchange starts at \$50,000.  
► **CrossComms**  
(508) 481-4060  
[www.crosscomms.com](http://www.crosscomms.com)

### Product alert

**WebVision, Inc.** has announced that WebTropics PageScript is available free at its World Wide Web page. PageScript is a Server Side Includes and Hypertext Markup Language extension designed to increase productivity and control available to those who develop documents for the Web. WebVision, Torrance, Calif. (310) 793-4500, [www.webvision.com](http://www.webvision.com).



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**CrossComms Corp.** has introduced CrossLAN Exchange.

According to the Marlboro, Mass., com-

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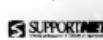
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Pentagon offers software tools to the masses, page 72

# Corporate Strategies

## Ticketless travelers

American Airlines software eases plane boarding

By Thomas Hoffman

As a financial consultant at Wells Fargo & Co., Dan Collins常常 frequents between his Dallas office and his group's Houston base. Southwest Airlines, his company's carrier of choice between those hubs, allows him to travel without plane tickets. Collins merely shows his driver's license at the ticket counter and gets checked in.

But Collins still has to "pull out [his] ID and wait on line," and that annoys him. That is why Collins is receptive to American Airlines' forthcoming AAcess Boarding program, an automated boarding system that will let passengers skip long check-in lines, run a credit card through a card reader, show identification to a security agent and board an airplane. "That sounds a lot better," said Collins, who often flies American Airlines for leisure travel.

Officials at American Airlines said there are many travelers like Collins.



**American Airlines' John Samuels:** The airline has already taken orders for 80,000 copies of its Personal AAcess software

This September, the Fort Worth, Texas-based airline will roll out AAcess Boarding to its Top 21 domestic airports, which handle 80% of the U.S. traffic.

"This is the only ticketless boarding system that allows you to get on the plane," said John Samuels, director of distribution planning at American Airlines. Other carriers that offer ticketless travel, such as Southwest Airlines, "require you to stop at a ticket counter and say, 'Hi, I'm here.'"

AAcess Boarding is based on card-reader systems from IER in London. The card readers will be wired directly to an American Airlines workstations join the Sabre Computer Network.

AAcess Boarding is just one piece of American Airlines' AAcess program, a set of online reservations and ticketless travel systems in which the airline has invested more than \$10 million. Personal AAcess is a Windows-based

*Ticketless travelers, page 72*

## Network makes toy maker's job a little more Kooshy

By Laura DiDio

Toy maker Oddzon Products, Inc. had a problem that most companies would envy.

Sales of the Campbell, Calif., company's kid-safe, soft rubber toys, such as the Koosh Ball and Vortex Football, were skyrocketing. The problem was, as sales rose, Oddzon's outmoded 10Mbps Ethernet network bogged down under the strain of new employees who were added to support growing sales.

Marketing and manufacturing operations.

"We were experiencing

serious growing pains, and our users felt it keenly," said Andre Bentzoune, Oddzon's information systems manager. "We were constantly experiencing network freezes and crashes, and the wait time to access network applications and services — especially the printer — was way too long."

Oddzon's solution was to install a Cisco Systems, Inc. 2800 Catalyst switch to replace the Intel network, *page 73*

## Vendors turn on the tap of R/3 tools

By Julia King

**L**ong and complex implementations have been a chronic problem for early users of SAP AG's R/3 client/server network.

But all of that is about to change as third-party vendors join SAP in delivering tools designed to streamline the process of getting R/3 systems up and running quickly.

IIDS Professor Scheer, a German company that sells project management and re-engineering software, next week will begin shipping an enhanced version of its Aris tool set. The software automates the process of mapping a company's business processes to SAP's best practices models and specificities within the R/3 software.

SAP's R/3 contains thousands of software tables that contain on/off switches, which must be set on or off. Users can configure the software thousands of ways, depending on their business processes. How they set the switches dictates how the software runs.

### It's automatic

With the Aris software, users no longer need to pore over R/3's tables. Instead, after they implement R/3, Aris automatically directs users to the appropriate R/3 tables.

"It captures all of your procedures and organizational structures that go along with the SAP software," said Bram Reinders, project manager at Akzo Nobel, a \$13 billion Dutch chemical company that has U.S. offices in Chicago.

Akzo Nobel is implementing a pilot R/3 system at its Chicago office and one U.S. plant. Because the business processes will already reside in Aris, Akzo Nobel can reuse them at other business units, Reinders said.

Also shipping is Live Model for R/3, a simulation tool from Intelllicorp, Inc. in

Mountain View, Calif., that, among other things, lets users see how various R/3 configurations will execute once a system is in production. This makes it easier for developers to incorporate user feedback into the final R/3 configuration.

### Trying on a new outfit

Deloitte & Touche's ICS unit in Chadds Ford, Pa., is outfitting its 1,800 R/3 consultants with laptop versions of the software. The firm is also linking its industry-specific best practices models into the software.



This "has the potential to cut double digit percentage points out of the [R/3] design phase," said ICS CEO Alfred Granwald. The next, "and a much more dramatic step," will be automating the actual configuration of R/3's tables, he said. -

"Right now, the Achilles heel of SAP is the knowledge required to configure it," said Martin Roper, vice president of manufacturing and business development at Boston Beer Co., an R/3 site in Boston. "Tools that would let you define a process or transaction, then push a button and it would configure the tables, would be incredibly useful."

Granwald agreed. With such tools, "you could eliminate the majority of work. But this is probably one or two years away," he said.



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So of course you'll be delighted to see users browsing and sharing information within your intranet. It's just a sure sign that you've streamlined communications to help people make smarter decisions and work better together. To learn more about how Microsoft can help make your intranet as easy to surf as the Internet, visit [www.microsoft.com/intranet/](http://www.microsoft.com/intranet/).

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WHERE DO YOU WANT TO GO TODAY?

# Pentagon offers tool set to masses

Analysis software helps groups decide which projects to fund

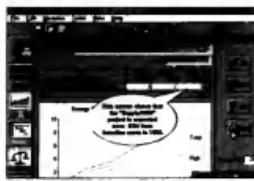
By Gary H. Anthes

A software package for business processing for re-engineering, inspired by the private sector and developed by the U.S. Department of Defense, is about to make its commercial debut.

TurboBPR is an integrated set of tools for business case development, strategic planning, operational cost and performance tracking, and investment analysis. It was developed in 1994 by the Pentagon in an effort to fundamentally improve the way it decides which projects to fund.

Along the way, TurboBPR attracted the attention of other government entities, which were under increased pressure to provide better service to the public at lower cost. So far, about 10,000 copies of TurboBPR have been downloaded from the World Wide Web by federal, state, local and foreign government agencies.

Last month, a version of TurboBPR tailored for corporate use will be released by SRA International, Inc., in Arlington, Va. Now called BioCase, it is based on Windows and costs \$650.



BioCase is an integrated tool set for business case development, strategic planning and cost tracking.

BioCase uses commercial terms, rather than government-oriented nomenclature. It drops some Defense-specific functions

**M**any of the underlying concepts in TurboBPR and its progeny, BioCase, are based on the 1990 book *The Business Value of Computers* by Paul Streelman. They use discounted cash flow projections, adjusted for risk, to rank investment alternatives.

TurboBPR and BioCase are written in Visual Basic and run on the desktop under Windows 3.1 or Windows 95. They comprise the following modules:

and adds a module for evaluating "implementation barriers and mitigation approaches."

TurboBPR designer Mike Yoeman, director of functional process improvement at the Pentagon, said conventional tools used by the government considered only the incremental, or marginal, costs and returns on investment alternatives. They might say, for example, to buy PCs rather than minicomputers because they are cheaper. What was needed, Yoeman said, was a tool that would look at

total costs. For example, TurboBPR allows the analyst to extend the PC vs. minicomputer analysis by considering the future costs of providing the services those machines are intended to offer.

A special strength of TurboBPR is its ability to tightly link strategic plans, mission objectives, current costs and performance and the results of investment alternatives. "TurboBPR always leads the user back to why he is doing something, back to the objectives," said Peter Denega, a professor of systems management who uses Tur-

## Yours free

TurboBPR is available for free at [www.sra.com/rj/turbopr/](http://www.sra.com/rj/turbopr/). Click on "Computer Lab." A demonstration version of BioCase is available at [www.sra.com](http://www.sra.com/).

bBPR at the National Defense University.

"Past tools tended to be fragmented," Denega said. "You could do a piece of this and a piece of that and then someone had to link them."

Federally funded nonprofits in Vienna, Va., used TurboBPR to help manage a series of projects aimed at reducing the costs of manufacturing and distributing uniforms. Donna Peterson, a research fellow, said it prompted managers to ask questions they hadn't formally considered before.

and performance against projections.

According to Streelman, a former CEO at the Defense Department and several major corporations, TurboBPR and BioCase address the issue of "alignment," which he said has plagued CIOs for years. "The software allows analysts to answer management questions about how IS investments contribute to profitability," he said.

Gary H. Anthes

## TurboBPR's strengths

- Strategic planning. Builds a structure linking goals, performance measures and strategies.
- Implementation barriers and mitigation approaches (BioCase only).
- Operational analysis. Provides insights into operations costs by product, service and customer.

- Initiatives. A spreadsheet tool for recording current and expected future project costs and performance.
- Alternatives analysis. Compares the cost and performance of alternatives based on discounted cash flow and other techniques.
- Actuals. Monitors actual cost

## Security issues lurk behind bank doors

By Network World Canada staff

Network security was far from perfect before its advent, but the Internet is making a difficult job even harder, according to banking vice presidents Donald Martin and Mark Dickelman.

Both spoke at the recent ComNet Canada conference in Toronto.

"There is an underlying theme [in network computing]. The underlying theme is, we don't even know what it is any more. So how can you begin to secure it?" said Martin, vice president of corporate electronic banking services at the Bank of Montreal.

With the advent of the Internet, it is increasingly difficult to secure vital assets from outside forces, especially as much of the environment is out of a company's control, Martin said.

But he remained his audience that the world outside the Internet is not without security risks. "We also have current-day systems that can be attacked and can

be defrauded, so what we do is try to estimate how much we'll lose and compensate for it," he said, referring to fake checks, fictitious credit cards, fictitious loans and the occasional bank holdup.

He said hackers and their more malicious counterparts known as crackers are dangerous, but the real threat to network security is organized crime. Underworld hackers will systematically look for soft spots in a company's system and try to profit from the gap.

**Take the right measures**  
Dickelman, vice president of operating systems at the Harris Bank in Chicago, stressed the importance of implementing appropriate security technology.

The first line is the lack of a good security base on which to build, Dickelman said. Encryption is great, but it isn't the place to start, and implementing pass-

word protection is only as good as the control over password choice.

The implementation of a firewall, although increasingly important, is also a place where small points are missed. The most common firewall controls the flow of TCP/IP traffic in and out of a network, but applications such as telephone banking and electronic mail also require protection.

"I think there is an increasing need for E-mail firewalls," he said, as online letter bombs and spoofing — where individuals identify themselves by false names or addresses — become more prevalent.

And new threats are still appearing, Dickelman said. For example, high-energy radio-frequency generators, called HERF guns, can damage computer data when deployed near installations, he said.

## Ticketless travelers

CONTINUED FROM PAGE 69

software package consumers can use to book reservations and pay for tickets. Users can enter preferences for window or aisle seats and pay online with a credit card, plus the credit-card number to American Airlines or pay at the American Airlines or pay at the airport.

The software is free to American Airlines' Advantage Gold and Platinum frequent fliers. Others pay a \$6.95 handling fee.

American Airlines also has launched Access via the World Wide Web on its recently enhanced Web site ([www.americanair.com](http://www.americanair.com)), in addition to online flight reservations and purchases; the site contains links to Advantage car and hotel partners, such as the Hertz Corp. and Hilton Hotels.

American Airlines rivals, such as USAir Group and UAL Corp.'s United Airlines, began marketing PC-based flight reservations soft-

ware to consumers last year. To date, those carriers are booking less than 10% of their reservations through direct electronic links with customers, said Mark Shields, a principal in the aviation practice at Mercer Management Consulting in Washington.

But Shields said he expects those figures to skyrocket as people get more accustomed to making purchases online.

That could spell doom for travel agencies, which historically have booked 75% of the airline industry's reservations, analysts said. Not surprisingly, nearly all of the consumer software being marketed by different airlines have varying degrees of bias. United Connections, for example, will show consumers all possible United Airlines routes before exposing them to other airlines' flights.

John Berger, owner of ABC Travel in Monroe, N.Y., said he isn't scared. "What takes consumers a half hour to do on their PCs takes us two and a half minutes," he said. "We're connected to a wider market and can offer customers more competitive prices" than consumer software.

# Network makes toy maker's job a little more Kooshy

CONTINUED FROM PAGE 69

Corp. 486-based, 50-MHz server and a 10Base-T Ethernet hub with Novell, Inc.'s NetWare 4.1.

Oddzon chose the Catalyst 2800 switch — originally developed by recent Cisco acquisition Grand Junction Networks — because it offered the growing, but cost-conscious, firm a switching solution that didn't "bankrupt our budget," Brantome said.

At about \$10,000 to \$12,000, the Cisco Catalyst 2800 was affordable. It also delivered the much-needed power of 100M bit/sec. Fast Ethernet capabilities on the backbone and 25 dedicated 10Base-T switched Ethernet ports for Oddzon's workstation users.

The Cisco switching device also handled NetWare's IPX and Apple Computer, Inc.'s AppleTalk protocols. And it delivered "out-of-the-box configuration and setup," Brantome said. "It was amazing to watch our collision problems and bandwidth utilization problems disappear."

#### Speed is of the essence

Lane Meadowcroft, Oddzon's graphic design manager, said the difference between the old 10M bit/sec. Ethernet and the switching on the Cisco Catalyst was "like night and day" for the Macintosh-based graphics department.

#### Oddzon Products

A subsidiary of Russ Berrie and Co.,  
Campbell, Calif.

nated," Meadowcroft said.

NetWare 4.1 with Novell Directory Services provided the toy maker with a scalable directory service database that allowed end users to access information anywhere on the network using a single log-on.

NetWare 4.1 also allowed Brantome to

make moves, adds or changes to the network from his central network management console and to "troubleshoot any problems that crop up at our distribution facility eight miles away."

The company also plans to add a Microsoft Corp. Windows NT Server network to

help Oddzon's engineering department accommodate large computer-aided design modeling applications.

Additionally, Oddzon expects to add a high-end Cisco Catalyst 3000 switch in the near future to accommodate the 80 to 100 users the company will hire in the next 12 to 18 months.

#### Fast Ethernet



## IT'S HOT!

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So mark your calendar now for ICE. And this fall, get where it's hot! 



Because the graphics department used the network to store many high-resolution graphics files, its networking problems — including collisions and freezes — were exacerbated.

"It took 15 or 20 minutes to transmit files and freezes would occur using the AppleTalk protocols. The Catalyst Ethernet switch lets us transmit 15M-byte files in five minutes or less," Meadowcroft said.

Much to the relief of his colleagues in other departments, the network has also slashed the time it takes graphics designers to complete a print job.

"The network was so slow that every time we needed to print a high-resolution mechanical, we'd hog the printer for 30 minutes or more. Since the Catalyst switch was installed, the problem has been elimi-

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It's okay to take a flyer every once in a while. Makes life more interesting. But not with your tape backup technology. Data today is simply too critical, often irreplaceable.

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So to all you adventurous-types, sorry. Exabyte's new 8mm technology does push the limits of performance. But it's still the safest choice out there. For more on our 8mm tape products, or for a free Mammoth Facts Technical Paper, call 1-800-EXABYTE.

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**DEAR LOUISE:** My son-in-law is the kind of person who keeps dropping by without calling first. Then he won't leave. He's a nice guy—some kind of computer manager—but he won't stop babbling. Night after night, it's "distributed environments," and "legacy systems" and "networked computing." He's obviously troubled and looking for answers, but I can't help. I'm in laundromats. How do I get my life back?

#### LOSING MY PATIENCE

**DEAR LOSING:** Be gentle, but be honest. Your son-in-law needs serious help. If you're not up to becoming an overnight expert in his field, try tacking a note to your door: "www.software.ibm.com/is/enterprise/." That's where he'll find instant access to all kinds of information about how other companies dealt with similar problems and found ways to run their businesses better. Or try earplugs.

**DEAR LOUISE:** I am a professional with years of experience... when I read to my aging mom one

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# your own ship

By Robert L.  
Schoen

You may have dreamed of quitting your corporate life and starting your own business. Meet three former IS professionals who have gone their own way and talk about their satisfactions -- and challenges.

*President and founder of iD Tech, a consulting firm in Wrentham, Mass., that specializes in developing systems that deliver business information by users*

**Revenue/profits:** Since she founded the business in May, Valadez takes home half-to-two-thirds of what she earned at her last job. She hopes to match or exceed that within six months.

**Lesson learned:** Don't get so caught up in current assignments and paperwork that you don't scan for your next job.



# Becoming an entrepreneur

## RESOURCES

### ONLINE

- The Edward Lowe Foundation  
[www.lowe.org](http://www.lowe.org) (a well-organized resource for resources, business planning, federal and state organizations, trade associations, etc.)
- U.S. Small Business Administration  
[www.sbaonline.sba.gov](http://www.sbaonline.sba.gov)
- MIT Enterprise Forum  
[web.mit.edu/enterforum/www](http://web.mit.edu/enterforum/www), Cambridge, Mass.  
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[www.smallbiz.sunys.edu](http://www.sbie.org/BS/abs/722.12th St. NW, Room 208, Washington 20005, (202) 628-8382</a></li>
<li>• National Small Business Development Center<br/>
<a href=)
- Small Business Advanced Management National Center  
[www.sbamr.unc.edu](http://www.sbamr.unc.edu)
- Cyberpreneur's Guide to the Internet  
[ase.ngi.lib.umich.edu/cidocs/cyberpreneur/cyber.html](http://ase.ngi.lib.umich.edu/cidocs/cyberpreneur/cyber.html)  
(Created as part of a class taught at the School of Information and Library Studies at the University of Michigan, this site serves as a guide to Web pages, gopher sites, listservs and newsgroups.)
- Entrepreneur Resource Center  
[www.20.mindlink.net/~interweb](http://www.20.mindlink.net/~interweb)
- On-line Small Business Workshop  
[www.sab.gov/bc.ca/smallbus/workshop](http://www.sab.gov/bc.ca/smallbus/workshop)

## Steering

CONTINUED FROM PAGE 77

There's nowhere to run, nowhere to hide, and you're finally in charge.

That's what drove Hahnke to buy her 24-foot-long sloop two years ago while she was an assistant vice president at CS First Boston Corp., a global investment banking and securities firm in New York. It's also what drove her to jump the corporate ship and chart her own course by starting her own company.

Now, whether racing off the coast of Boston or steering her business, Hahnke calls the shots.

Captaining her four-person crew is "the best management training one can have," she says. "Things get very tense; people make mistakes. There's time and performance pressure. You've got to keep everyone working and working at peak capacity. You can't walk away."

It sounds like trying to be the mortgage broker your biggest customer keeps forgetting to mail the check. But with a five-to-six-month financial cushion and a network of friends and co-workers to tap for job leads, Hahnke said she "felt personally ready to do it."

Running her own business has long been a dream for Hahnke. In the mid-1980s, as information systems director at a 40-person business finance firm, she saw the "holistic" view her peers took of loan applicants. "We had to do a credit evaluation, cash-flow analysis, accounting, balance statements, look at their sales and marketing efforts... I thought, 'Hey, this is a real challenge. You're really firing on all cylinders,'" rather than

focusing on just IS.

During her eight years in financial services — most recently as director of fixed-income technology at Fidelity Investment Co. in Boston — she came to see her prime skill as developing systems that deliver business information to users. She reasoned that if she could focus on that work as a consultant, build a business around that need and get more control over her life and work.

Hahnke's first big step on that road came last November when she joined Hurwitz Group, Inc., a consulting firm in Newton, Mass., as vice president and director of corporate services. Her role was to create consulting services aimed at IS managers. But with that role, she still "wasn't making the strategic business decisions, and that's what I wanted to try my hand at," she says.

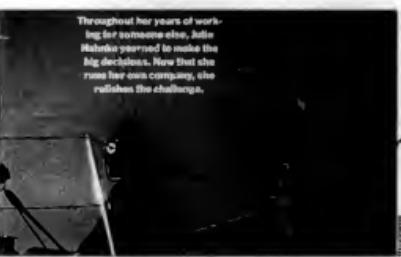
That's why Hahnke took the plunge this spring, quickly learning just how

much administrative overhead a small business takes. Of the tasks included setting up a business phone line to her house, figuring out how to use fax software and meeting with her accountant. Despite the distractions, she says she can easily earn half her previous income to start and match it within six months.

Hahnke brings a healthy background in business, management and technology to her new role. But that background didn't come automatically. For example, for nine months, she spent 15 to 20 hours per week of her own time to get a securities broker's license and cultivated relationships with securities traders to learn the business through their eyes. She also cultivated mentors to help her learn management skills.

Any IS professional has multiple opportunities to pick up that training, Hahnke says. "But you have to strive to pick it up," she says, especially if you want to call alone someday.

Throughout her years of working for someone else, Julie Hahnke learned to make the big decisions. Now that she runs her own company, she continues the challenges.



## Eugene Bedell

Founder and CEO of Seer Technologies, Inc., an application development tool vendor in Cary, N.C.

Revenue: \$117 million; Profit: \$5.2 million (1995)

### Lessons Learned:

- It takes three times as long — and three times as much money — to develop software for the commercial market than for internal users.
- Don't rest on your laurels. Start changing your products and processes to meet the next challenges.

Bedell was born and raised to own a business.

He jokes that his entrepreneurial drive was "in the genes" — his parents Gene and Jean, who together owned a series of businesses that included auto dealerships, a manufacturer of fiberglass boats, a mortgage company and an accounting firm. Through it all, even when two businesses went out of existence at the same time, "there was always a sense of confidence that ... they could start another one. They had no one to depend on to accept themselves, but they felt unbelievably secure," Bedell says.

So it's natural that Bedell's father couldn't understand why, after his son received his graduate degree, Bedell didn't find his own company instead of taking

a series of jobs. Bedell wound up earning "in the multiple six figures" as a managing partner and chief information officer at CS First Boston, where part of his mission was to build enterprise-wide, distributed applications to help the firm adapt to rapid changes in the financial services market. The tools developed by Bedell's group to build those applications were so robust that other companies showed interest in buying them.

Management at CS First Boston didn't want to get into the software business. So when they asked Bedell if he wanted to spin off the tool business in March 1990, "it was clear this was the right thing for me to do," he says.

Bedell wasn't your typical entrepreneur scratching out an existence in his

spare bedroom. He could afford an 80% pay cut and still invest \$100,000 in what is now Seer Technologies. It became profitable in 1991, went public in June 1995 and hit revenue and profit records in its first two quarters as a public company. But in the next six months, revenue fell 9%, compared with the same period a year earlier. And Seer lost \$10.4 million, compared with profits of \$1.5 million in the same period a year before.

At that time, Bedell said the downturn showed that Seer needed to speed up its efforts to broaden its product line beyond its initial high-end tool. Seer will try to address that with a series of product rollouts through the rest of this year. Seer also cut costs because of lower-than-expected sales by cutting 75 of its 675 jobs in the past three months, he says.

"The biggest mistake, and biggest challenge, has been ... to get the company structured to move from \$120 million [in revenue] to \$500 million," he says. "I don't think I ever appreciated changes that had to be made fast enough ... changes in product structure, changes in the distribution mechanism, changes in partnerships and even changes in management."

One factor that can slow a software company's response time is that it takes three times as long to develop software

## Becoming an entrepreneur

that will be sold in the commercial market, compared with software that will be used only within a company. That's because users who buy software tolerate fewer bugs than users within the company who have no choice in its use, and the complexity of upgrades grows with the size of the installed base.

Bedell's years as a CIO helped him "understand how customers think," but they didn't give him other skills he needed as an entrepreneur. Those include the ability to sell, run a business and communicate with financial analysts.

Seer is changing. In April, it announced it was splitting the roles Bedell had held as president and CEO. Bedell is still CEO, but the company will give the president's title to a yet-to-be-named executive who will oversee operational issues, according to Bedell.



**Gene Bedell** has a diversified background and splits as CEO of Seer Technologies.

He says he doesn't expect his duties, which include product direction, decisions about distribution channels and partnerships with other companies, to

change. Living the example his parents set, Bedell insists he isn't discouraged by Seer's downturn and doesn't let it dominate his life. Although he "lives and breathes, this company," Bedell says he limits his work week to between 50 and 60 hours so that he can spend time with his wife (who also works at Seer) and their two small children.

His annual income is "considerably less" than what he made as CS First Boston, but the money has been "very rewarding," taking into account the 20 to 40% of Seer stock he owns. But he still has one other tip for entrepreneurs: "Spend a lot less than you earn" so that you aren't stressed about your monthly cash flow. Bedell boasts he never buys a car unless he can afford to pay cash for it. "Of course now," he says chuckling, "I happen to own a Porsch."

## Alex Bakman

**President and founder of CleverSoft, Inc., of Scarborough, Maine, a vendor of tools to manage distributed applications, primarily Notes. The company was sold July 1 to Candle Corp., in Sunnyvale, Calif., for an undisclosed sum.**

**Revenue/profits:** Not disclosed, but Bakman says the firm has been profitable for the past six months, and sales have risen 35% per month for the past year.

### Lessons learned:

- **Marketing and sales are much more important to success than he thought — at least as important as technical skills.**
- Be hard-headed about what skills job candidates can bring to the job immediately.
- Everything takes longer than you expect. Focus.

Bakman knows artificial intelligence. He knows application management, distributed systems and Notes. What he didn't know when he started his own software company was "dog food."

To be more precise, he "didn't realize the degree to which [his firm] had to be a dog food business." That means Bakman had to produce products that the "dogs" wanted to eat or he was sunk.

"Technical proficiency in product development is a very small, minute component of building a successful company," says Bakman, who formed CleverSoft after he left Unum Corp., a life insurance company in nearby Portland, in August 1994. "Marketing and sales are just as important, if not more important," as the ability to juggle tasks and focus on solving real customer problems.

For Bakman, that meant aiming his CleverWatch and CleverManage tools at administrators of Notes, a product whose complexities he came to know as a senior systems consultant at Unum. What helped keep him focused was the fact that he had only a six-month personal financial cushion, and he had to pay the two other former Unum developers on staff. His staff has grown to eight, but not without some turnover that taught him to take a closer look at applicants' skills.

After he sold CleverSoft, Bakman didn't suffer any postpartum depression. "This is a marriage of strengths," he says of combining CleverSoft's technology with Candle's deeper pockets and distribution channels. As Candle's vice president of solutions and research and development, Bakman says he'll be free to run "a business within a business" and keep CleverSoft focused on short development cycles and customer needs.

Before he joined Unum in 1995, Bakman worked in IBM's sales force, selling products and services to New York-based financial services firms. Before that, he worked at the computer giant's artificial intelligence laboratories. He says few of the skills he learned in large corporations have helped him in his new life because while he worked for someone else, he mostly focused on technical issues.

"In the entrepreneurial world, you have to worry about everything from sales and marketing, finance, product development," he says.

One thing Bakman didn't have to worry about was building a customer base from scratch. Unum was happy to become his first customer because it was a cheaper and less risky way for the company to get the management tools it needed than to develop them in-house.

Having gotten to this point, does he feel like he's given away his child?

Absolutely not. "We're going to take this baby to its adolescence and into maturity," he boasts. "We're going to keep it here."

## WANT TO STRIKE OUT ON YOUR OWN? HERE ARE SOME POINTERS:

1. Marketing and sales skills are as important as your technical skills.
2. Cash flow is important, especially if everything is coming out of your own pocket. Do you have a product or service someone will buy immediately?
3. Become a task juggler. Beyond the technical work, you'll be doing administrative, personnel, marketing and sales work.
4. Focus is crucial because there are only so many hours in the day, and everything will take longer than expected.
5. Expect to work longer hours and earn less, at least at first. Build a financial cushion beforehand, and keep it by living beneath your means.

Schrier is a Computerworld senior editor, management.

## RESOURCES

### PUBLICATIONS

- **Business Strategies Newsletter**  
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— Compiled by research analyst Laura Hunt

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July 22, 1996

AberdeenGroup

# Universal Servers

*RDBMS Technology for the Next Decade*



A Computerworld Custom Publication

## *Introduction*



# Rebirth of the RDBMS

So elegant is the relational database management system (RDBMS) model that it has survived for 20 years, focusing on simple types of data: integers, scientific floating point, character strings, date/time and money.

However, the business world is not nearly as simplistic as it once was, and as a result, the RDBMS model has been pushed beyond its 20-year-old design capabilities. The need for data management solutions accessing complex data — in data warehouses, Web pages or competitive-advantage applications — is exploding. And if RDBMSs have one drawback, it is that they do not handle highly complex information well.

Because of the RDBMSs' understanding only simple types of data, it is under considerable technology pressure — from innumerable real-world applications that demand more information from the data.

A solution to the challenge facing RDBMSs — extensibility — is arriving in the form of the Universal

Server. The Universal Server will allow IS organizations to extend their current RDBMSs so that they can handle complex data types and work better with new technologies such as Intranets, relational-OLAP and the latest development toolsets — ensuring that enterprises can continue to leverage their existing investments in RDBMSs.

Universal Servers will allow IS organizations to extend their existing RDBMSs with complex data, functions and access techniques. And once ISVs create cross-industry and vertical-market-specific data extensions, IS will have more options for buying relatively inexpensive, reusable components instead of employing scarce database-programmer resources.

The Universal Server will be one of the most significant advances in RDBMS technology over the next decade. In this White Paper, Aberdeen Group looks at the short- and long-term benefits this technology holds, and will explain why it considers the Universal Server "the rebirth of the RDBMS."

This White Paper was written by Peter S. Kastner and Wayne T. Kernochan of Aberdeen Group Inc., a market research firm in Boston. Mr. Kastner — Group Vice President of Aberdeen, and general manager of its commercial systems practice — is a leading analyst of trends in databases, OLTP, decision support, client/server architectures, distributed commercial systems development and commercial benchmark auditing and analysis. He also conducts consulting studies in distributed systems planning, database management software and Internet/Intranet issues for both buyer and supplier organizations. Mr. Kernochan, as Vice President of Commercial Systems Research, implements Aberdeen's Buying Guides for distributed, open RDBMS and client/server application development environments, as well as consulting projects for Fortune 1000 clients and product vendors. He has 12 years of experience in DBMSs, network operating systems, office automation, and E-mail for mainframe, midrange, Unix and PC LAN environments.

EDITORIAL DIRECTION BY LARRY GOODMAN

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# Universal Servers

## RDBMS Technology for the Next Decade

The most serious challenge so far to the supremacy of RDBMSs in managing data is the increasing need of enterprises for complex and function-related data. An enterprise RDBMS hits the wall when all data must be expressed in RDBMS terms as simple data types.

Technology trends demand more complex data types, which RDBMSs support either with difficulty or not at all. Relational OLAP asks for large-scale multidimensional and time-series data. Internet and Intranet implementations demand text and graphic data types that RDBMSs have not fully integrated with their traditional numeric data. Object-oriented and client/server development toolkits fit best with data management systems when those systems provide high-level data types plus data "encapsulated" with the functions that operate on it.

In short, IS has pushed the RDBMS model beyond its 20-year-old design capabilities. Aberdeen Group believes the best way to extend installed RDBMSs is to add support for complex data types, creating a Universal Server — an RDBMS that allows users to access complex data types (including functions related to particular data types) and to

support open, extensible user-defined datatypes.

The key word in this definition is "open." For years, RDBMS vendors have offered proprietary add-ons which gave users incremental capabilities but did not let them extend the database to understand the data formats, functions or complex queries of their own industries...or even their own enterprises.

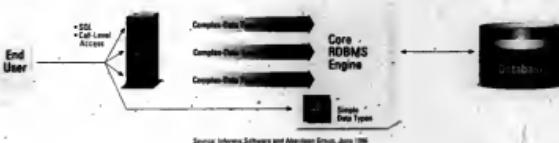
In contrast, the Universal Server architecture lets IS "have it your way." By promoting present and future "your way" extensibility, this architecture ensures a framework for customizing an RDBMS to its specific application mission, such as Internet OLTP.

Also, the Universal Server architecture does not require major rewrites or upgrades to current systems. Because IS simply adds new capabilities for complex data types to an existing RDBMS, the effect on a production system is minimal, and IS has full control over how much and how rapidly it takes advantage of the new functions. Figure 1 shows a typical Universal Server architecture.

### What Universal Servers add

Universal Servers deliver the following seven new or upgraded capabilities to an enterprise RDBMS:

Universal Server Architecture



Source: Informix Software and Abstraction Group, June 1996

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*1) More support for complex data types*, via specific operations (e.g., search a video archive for a visual pattern) and storage of new types of data (e.g., multidimensional, text, multimedia or spatial). Many applications can benefit from having data in the right form for the application, as well as for the application user. For instance, a text-search capability applied to a comments field can extract repeated information that cannot be extracted by current RDBMS query capabilities.



With Universal Servers, enterprises can have their cake and eat it too — combine Web content that is rich in complex data types with highly scalable RDBMS technology.

*2) More support for complex operations on simple and complex data types*. Support for more complex functions is built into Universal Server extensions. For example, by including statistics and mathematics libraries in the core RDBMS, users of decision support systems will be able to perform complex data analysis without reinventing the wheel.

*3) More efficient high-level data access and computation*. Tuning the Universal Server's query optimizer for particular types of complex data can vastly improve querying speed on those data types. Likewise, complex computations such as pattern matching and economic-order-quantity functions scale better.

*4) Better fit with today's development tools, development processes and GUIs*. Even though development tools and processes operate at a high level on objects, components and templates (and layer higher level constructs on top of base components), most developers must still program RDBMS access at the simple-data level. Similarly, data-displaying GUIs based on object-oriented technology must link to crude-relational data items. Because Universal Server programming interfaces operate at the same high level as advanced development toolsets, programmer productivity on large-scale data-intensive applications can be vastly improved.

*5) Better fit with Internet/Intranet architectures*. Enterprises scaling their Internet and Intranet architectures and connecting them to back-end databases face difficulties merging text- and multimedia-heavy Web pages with simple-data RDBMSs. With Universal Servers, they can "have their cake and eat it too" — combine Web content that is rich in complex data types with highly scalable RDBMS technology.

*6) Effective ROLAP support*. As data miners drive deeper into ever-larger data warehouse databases, requirements for complex data types translate into a need for more complex queries. The bit-mapped indexing, star schema and aggregation support of today's Relational OnLine Analytic Processing (ROLAP) and RDBMS suppliers can deliver order-of-magnitude improvements in the speed of complex queries, but further improvements require that multidimensionality, aggregation and time-series support be driven farther into the RDBMS core — particularly into the query optimizer.

Thus, Universal Server support for multidimensional and time-series complex data types allows designers of data warehouses and developers of querying applications to take advantage of new complex-query speed-ups. Moreover, it incorporates multidimensionality in the core RDBMS, with significant performance advantages over approaches using separate OLAP engines.

*7) Must important, the Universal Server adds extensibility to an RDBMS*. The Universal Server's open support for user-defined data types gives IS far more flexibility to adapt to changing user demands and to technologies requiring new data types. Moreover, RDBMS makers and VARs now have the opportunity to deliver customized and vertical-industry-specific modules supporting complex data types.

#### Business benefits of a Universal Server

"What are the 13-week average sales for our top five profitable products?" Business managers asking this simple question do not know that to implement it, an RDBMS programmer must churn out and test several pages of SQL code to first calculate the profitability of products, then rank them by profitability, and then calculate the 13-week average sales. Nor do they realize that the query must be reworked the

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following week. The 13-week average changes every week, but because the RDBMS does not understand time series, moving averages or ranking, the programmer must force-feed it with a program embodying these "complex data types."

Universal Server ROLAP extensions that define functions for ranking, profitability and time series will make the programmer's job simpler and will result in much smaller programs that are more likely to be error-free. They will also make it easier for users with desktop query tools to express their data needs in terms much closer to business reality, fostering faster "data knowledge" activities by users.

However, the long-term benefits of Universal Servers will be even more significant, since they will apply to commercial applications in nearly all industries. For example, exploding bill-of-materials and calculating economic order quantities are difficult tasks with today's RDBMSs. But with Universal Servers, they will be relatively straightforward, allowing more effective just-in-time resource planning.

Enterprises will also be able to query their videotape records and onsite-camera video feeds for particular patterns. For example, video cameras monitoring an assembly line can feed video data into a Universal Server database that can detect anomalies such as defects and trigger corrective action, thus improving product quality at lower cost.

Figure 2 lists other opportunities for companies implementing Universal Servers.

### Informix's role

With its acquisition of Illustra, Informix has become the leader in Universal Server technology. It can now combine its scalable Informix-OnLine architecture with Illustra's DataBlade modules (add-ons that support complex data types). Full integration between the two is scheduled for year-end.

Informix plans on releasing 25 DataBlade modules by year-end, covering data types such as text, video, ROLAP and spatial, as well as specific functions such as banking.

The currently available INFORMIX-Universal Server development toolkit provides a debugger and a class-library for data access tools, and support for C-language functions. In the future, users will be able to take advantage of Informix's NewEra development toolset, but today they can already partition DataBlade components between client and server. VARs and power users can develop their own DataBlade modules, ensuring that IS can exploit industry- and application-specific database extensions.

Informix is also adapting key features of its core architecture. For instance, extending its query optimizer to handle complex queries and complex data types at a higher level should add complex-data-type performance scalability to an Informix-OnLine architecture already regarded as a leader in parallel scalability. Also, supporting complex data types across the Informix architecture should lead to exceptional support in its administrative toolsets.

### Examples of Opportunities for Universal Servers

Area	Opportunity
Financial/Insurance	Derivative calculation, quantitative-model scaling, extrusion tables, currency conversion
Manufacturing	Bill-of-materials explosion, economic order quantity computation
Healthcare	Treatment coding hierarchies, image and document management
Data Warehouses	Aggregates, time series, business model-based data mining
Sales and Marketing	Geographical, spatial, and demographic (e.g., sales by area) data, customized multimedia devices
Security	Monitoring video cameras for changing patterns
Entertainment Industry	Querying videotape archives, retrieving live-broadcast material for immediate playback, supporting pay-per-view
Pharmaceutical	Molecular modeling and computational chemistry
Communications	Parsing telephone numbers, decoding IP addresses (e.g., for the Internet)

Source: Abetion Group, TME

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## Picking the right Universal Server

Aberdeen Group recommends two yardsticks for determining how well RDBMS suppliers have implemented Universal Server technology.

1) Degree of extensibility/flexibility. A Universal Server should provide an architecture for extensions that handle a range of common or important data types. It should also allow IS to define custom data-type extensions ("user-defined data types") for particular industry or na-

ture will coordinate the many extensions and permutations needed to support real-world application requirements.

2) Integration of Universal Server technology with the main components of the core RDBMS engine. Applying the scalability, support of distributed databases, and open flexibility of today's high-end RDBMSs to complex data types requires that each core-engine implement support

tron and transparency.

How much does the high-level "universal" with which a Universal Server surrounds a complex data type show performance? How well do RDBMS scalability techniques such as cost-based optimizers and parallel-execution technology translate to new data types? No RDBMS benchmark can yet measure Universal Server performance in real-world customer situations. For now, enterprises should create their own benchmarks based on their own complex data types.

A Universal Server administrator that should extend today's RDBMS and systems management tools to provide a view of, and allow operations on, the overall complex data type and its simple data-type components, as well as the relationships between components and the functions associated with the data type. For complex data types (some of whose components are in different databases within a distributed database), an administration toolset should provide both a global, view and a single-database view.

The Universal Server should provide either the same or similar operations on complex data types as on today's simple data types (e.g., insert, delete, join); a similar look-and-feel for data display; and APIs or client libraries that do not require a migration effort for existing RDBMS-based applications. This "overloading" will allow enterprises to reuse code for new data types without major rewrites.

### Is it a Universal Server?

### How Effective is a Universal Server?

terprise needs, e.g., a data type related to a business process. It should also supply flexible development tools and APIs or class libraries that support high-level data access and integrate well with an enterprise's other server-side development tools. Ideally, the architec-

- Does it support the major complex data types (e.g., text, video, audio, image, and spatial)? In particular, can it accept new indexing methods for new data domains?

• Is it extensible, e.g., via user-defined data types and open APIs?

• Is it integrated with a distributed, open, scalable RDBMS (e.g., does it offer parallel scalability and replication technology for distributed-database support)?

• Is it architected to be highly extensible and flexible, via a wide range of complex data types supported, with powerful development tools to create further extensions and with broad third-party and VAR support?

• Is the technology deep into the architecture — for instance, does the query optimizer understand specific complex data types and what to do with them?

• Does it deliver high performance and scalability for the complex data types that the enterprise needs?

• Do development and administrative tools support complex data types?

• Can RDBMS data-access operations (e.g., join) be applied across data types?

Source: Aberdeen Group, 1995

ture will coordinate the many extensions and permutations needed to support real-world application requirements.

When it comes to assessing a Universal Server, there are three other factors: performance, administer-

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and "overloading" across DataBlade modules. Finally, these architectural changes will allow SAP, PeopleSoft, Baan and other vendors to migrate their client/server applications to Informix's Universal Server without application code changes.

### Universal Server competitors

Oracle has folded its Video Server, ConText and Spatial Data options into Oracle7.3. The Video Server database is separate; the ConText text database (an extension to 7.3), merged with Oracle7's simple data, is slated to ship soon. Oracle's Developer/2000 toolkit provides a server-side toolkit for multimedia data types, but these complex data type extensions are still distinct database servers, neither fully integrated with Oracle7 nor highly extensible. For more extensive integration and user-driven extensibility, customers will have to wait for the company's "object" release, Oracle 8.0, in 1997.

IBM's DB2 Common Server (for OS/2 and Unix

platforms) offers functions to access parts of a data type, as well as the ability to insert a data type too large for main memory into the database; DB2 also includes bundles of triggers, user-defined data types and user-defined functions for particular data types called Relational Database Extenders (e.g., a text, imaging, audio or video server). These Extenders will support fingerprint analysis and querying by SQL of image content (color, shape or pattern).

In the long term, the text Extender may prove particularly valuable, because it includes information retrieval technology. However, IBM has not yet driven this support for complex data types deep into the DB2 architecture. Nor are Extenders yet included in DB2 Parallel Edition or DB2/MVS.

Computer Associates' dual-database strategy includes CA-Ingres and Jasmine, an OODBMS with a multimedia- and Internet-enabled toolkit. CA has no plans to combine the two or to otherwise offer Universal Server functionality. Nor has CA fully integrated extensibility of complex data types into CA-Ingres or driven it into the architecture.

Neither Sybase nor Microsoft yet offer support for complex data types comparable to Informix, although Sybase has announced that, to allow ISVs to link snap-in complex data types with SQL Server System 11, it will provide an Adaptive Server combined with its ObjectConnect middleware.

### Conclusion

Universal Servers will be the next big RDBMS technology wave. Enterprises can gain strategic advantage today by using Universal Servers for deeper data mining, multimedia Intranet and Internet architectures, developing large-scale applications, and adding complex-mathematics and data manipulation features to current customer-interface and back-office systems.

Long-term benefits, however, are likely to come from innovative functional or vertical-industry applications. To succeed in these, users should start learning the ropes in such areas as design, administration and scaling performance. As for IS, it needs to choose a Universal Server wisely, target strategic opportunities proactively, and begin planning and prototyping implementations immediately. ■

## Not enough OOmph

In the early 1990s, it seemed like object-oriented DBMSs might be the IS choice for accessing complex data. OODBMSs allow developers to handle high-level and complex data types, especially CAD/CAM graphics and text databases. But because they were created from the ground up, they lacked the advantages of RDBMSs that IS had come to expect: superb query capabilities with SQL; excellent OLTP performance; and an ISV industry providing complementary utilities and application solutions.

To match the scalability, flexibility and robustness of their relational counterparts, it was necessary for OODBMSs to implement multi-threading and SMP support, distributed database features and open gateways from scratch. Unfortunately, they were, in effect, chasing a moving target from far in the rear. As a result, the market so far has decreed that OODBMSs are niche players, not yet appropriate for large-scale or mission-critical applications.

### UNIVERSAL SERVERS

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## In Depth



# Hype headaches

*IS execs feel pressure to rush 'net projects*

BY JOSEPH MAGUTTA

CONTINUED FROM PAGE 1

"Everybody is an instant Internet expert," says Mary Jo Orzech, director of academic computing services at the State University of New York in Brockport. "It's driving me crazy."

Many of her colleagues agree. A new

*Computerworld* survey of 100 high-level information systems managers found that the barrage of Internet coverage in the mainstream media during the past 18 months has caused new pressures and more work for technology groups. The

Hype headaches, page 85

(www.computerworld.com) JULY 22, 1996 COMPUTERWORLD

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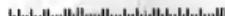
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## Hype headaches

CONTINUED FROM PAGE 81

biggest complaint: unrealistically high user expectations.

"There's a heightened anticipation from all the hype," says Ron Sheppard director of technical services at Sea-Land Corp. in Miami. "I'm not sure we're able to meet it."

Overall, IS managers say sharing the spotlight with a media darling has brought more clamor than glamour.

Among the survey findings are the following:

- 38% of IS managers polled have diverted precious resources to Internet projects as a direct result of too much management reading press reports about the technology.
- 28% report spending "more time than I should" responding to business unit or functional managers' inquiries about the Internet prompted by media coverage.
- 16% say "overinflated expectations about the Internet have caused us to waste money."

And if starry-eyed users don't kill you, the sheer crush of materials might. In one week in early July, a search turned up no fewer than 7,235 references to "Internet," "intranet" and "World Wide Web" in newspapers and magazines. That doesn't include thousands more references in research reports, vendor materials or anything published electronically.

"I spend literally half my time reading," says Matthew Kritin, workflow solutions manager at Concert Management Services, Inc. in Reston, Va. He heads Internet projects at the company. Other IS executives confess in private that they've stopped trying to keep up with Internet and intranet news. Says one: "There's no way I have to rely on my secondary technical people."

**Squeeze play**  
Of course, not all senior executives swoon over the Internet. Many have been burned before by flash-in-the-pane technologies.

Moreover, stories about computer hackers and viruses have heightened anxiety for many top executives, which can make it difficult to consume or even start important projects.

These days, IS managers find themselves squeezed between Web-crazed users and zealous but wary CEOs.

Publicity about the Internet seems to have fueled the revolt of end users bent on buying and maintaining their own systems.

That revolt began when PCs hit offices in the early 1980s. "You're starting to see more competition from other non-technical executives trying to run some of these technologies," says George Bremer, vice president and chief information officer at MCA/Universal in Universal City, Calif.

Unfortunately, Bremer says, booming interest in Internet technology can create situations in which a little knowledge is dangerous to users and the corporation. "When people start doing their own things, costs are going to go sky-high."

He tells of one executive several years ago who ran an expensive T1 line into a conference room when IS was working on the same thing. "That gal is no longer with the company," he says.

Collette Codd, who heads Internet and intranet implementation at Ernst & Young, agrees that Internet publicity has created real dissatisfaction. "We hear reading about IS not being proactive enough, or not providing Internet access, or perhaps not being able to find what they want or the right cost," she says.

Codd says the rush to build home pages, often without adequate skills, can be a "distraction from other major projects."

At SUNY Brockport, for example, Orzech says faculty members were eager to create departmental home pages. So they diverted a five-person group from work on key student accounting and management systems. "We did that for a brief amount of time before saying, 'We'll train you and give you tools to do it.' But everything else fell behind after they had made it Priority One."

### Silver linings

Of course, Internet mania hasn't all bad. Jim Sutter, vice president and general manager of IS at Rockwell International Corp., says the widespread publicity "has been a blessing" for the Seal Beach, Calif., firm. "There's a certain skepticism.

"But it's helped build Internet and intranets into

the mind-set. It reinforces everything we are trying to do," he says. Sutter says that unlike client/server a few years ago, the Internet stands a good chance of living up to the hype, thanks to more mature products and tools that sometimes deliver dramatic results.

"Senior people ... get excited when they see something delivered in a short time — a couple of days or weeks," he says. "It's been that phenomenon that's rapidly spurred interest."

Many CEOs are interested, agrees Charles Lucier, senior vice president and chief knowledge officer at Booz Allen & Hamilton, Inc., a consulting firm in McLean, Va. "They suspect the Internet might be useful to address the important issues on their agenda: Stimulate global growth, manage customers and suppliers, and move beyond business process engineering," he says.

Media coverage has sparked that interest, Lucier says. "We didn't get a lot of questions about client/server tools and [computer-aided software engineering] from CEOs in the past. This is different."

In some cases, widespread publicity has helped redirect IS efforts, especially in development, toward the Internet and intranets. But even that has produced new pressures.

"We have decided to make a major shift toward the Internet and browser-enabled front ends," says the IS head at a major insurance company. "That's meant lots of scrambling to get the infrastructure and [HyperText Markup Language] and firewalls in place."

Even as the media's fickle spotlight fades, expectations about the Internet and intranets — whether realistic or not — probably won't. Nor will workloads. "CEOs may forget specific technologies," Lucier says, "but they don't forget unrealized promises."

Orzech predicts, "Our 15 minutes of fame will be followed by three years of darkness." ■

**Maggie is Computerworld's senior editor, corporate strategies.**

## Reading more, believing less

*When it comes to media coverage of technology, more definitely isn't better. Many IS managers say they are reading more about the Internet but believing less of what they read.*

**40%**  
agreed that "the news media's coverage of the Internet has reduced my confidence in the media's ability to accurately report new technologies."

**73%**  
agreed that "the news media often hype technologies beyond their potential benefits."

**39%**  
say they have reduced reliance on information from the news media in making decisions because of "not hype, to interviews, news IS managers say they use a wider mix of people, consultants and online sources to get technology information."

**55%**  
agreed that "the media and investment community hype about the Internet is out of proportion to today's actual value to business." Capitalization was strongest in companies with less than \$100 million and more than \$1 billion in annual sales.

Overall, technology experts say they filter information to get a realistic picture. But many say they believe business leaders and investors with limited understanding are less able to do so. Despite what they read on hype, many's deepest desire is implementing Internet plans.

**66%**

in implementing Internet plans.

# Computer Careers

# Master of your destiny

Experts agree that an advanced college degree can be the key to taking an IS career further, faster.

by Leslie Goff



**Y**ou're certified in a couple of different tools. You go to training seminars and workshops. You keep up with developments well enough. Yet you aren't moving up the information systems ladder as quickly as you'd like. It may be time to consider going back to school.

Traditional drill-and-practice skills training remains an important part of maintaining competencies. But a master's degree that complements your undergraduate degree and professional experience can sweeten your chances for a more fruitful IS career, according to IS managers, trainers and recruiters.

"If your intent in furthering your education is to gain new opportunities with new companies, an MBA can be a lifeline," says Norm Lord, a manager at Liberty Mutual Insurance Co.'s Performance Support group, the insurer's training division in Portsmouth, N.H.

The motivation or time to commit to a degree program can elude many IS professionals. But continuing education classes tend to go deeper into a technology's roots and focus more on conceptual issues than training seminars. They can supply a mental and professional edge.

"When you see a university course on someone's resume,

you know there's been time for the information to really sink in," says Jim Tomayko, associate director of the Masters of Software Engineering Program at the School of Computer Science at Carnegie Mellon University in Pittsburgh. "With a training class, you lose 50% of the information the first day after the course, and overall, you do well to hang on to 20% of it."

The potential benefits of a better-educated IS staff are recognized by more corporations and universities. The result is a plethora of educational opportunities for IS professionals, such as the following:

- Many companies are bringing the classroom to the employee. Formal partnerships with nearby universities allow companies to offer on-site master's degree programs to their employees, such as the Master's in Computer Science offered by Boston University at Liberty Mutual in Portsmouth (see sidebar). Other companies use ad hoc arrangements.

- Tuition reimbursement programs are a staple benefit at most large companies.

- Topflight computer science schools such as Carnegie Mellon ([www.cs.cmu.edu](http://www.cs.cmu.edu)) and MIT ([The\\_Globe\\_Network\\_Academy](http://The_Globe_Network_Academy), [mit.edu/](http://mit.edu/)), offer online courses and degrees aimed at busy professionals who don't have the time or the money to attend the schools.

- Force yourself to get some extra education," says Phil Kaufman, assistant vice president of professional development in the IS training group at Chubb & Son, Inc. in Warren, N.J. "In the IS profession, if you haven't learned anything new in a while, you're at risk. Unless you're changing careers, force yourself to expand your horizons." ■

Goff is a freelance writer in New York.

## On the inside track

**STEVE ABRETT**  
Member of admissions  
Revenue management department, Alamo  
Rent A Car, Inc., Fort Lauderdale, Fla.  
**MBA, accounting**  
Florida International University,  
August 1994  
Bachelor of science, managerial finance  
University of Florida, May 1992

**A. LEE ALBRETT** is the prompted director of Ad Alamo, a status he attributes to getting his master's degree. "It allowed me to achieve levels that others achieve in a much longer period of time," he says. While Alamo's IS group has become a success in less than two years while working on its degree, he oversees the design of a fleet-planning system that will be in a new revenue management module.

"The research skills provided one the opportunity to fit in to this key role," Albrecht says. But it was a MBA that clinched the deal. "I thought the combination of accounting and computer science would give me a niche market, and that's what I found."

Taking advantage of Alamo's tuition-reimbursement program, Albrecht took two courses each semester. He worked at Alamo 65 to 70 hours per week and was in class about 15 hours per week.

"I kind of enjoyed myself too much at times," Albrecht says. "I just kept thinking about the benefits. My goal was set, and I knew what I wanted."

## Lessons to live by

**STEPHEN BOARD**  
Senior technical writer  
Performance support group, Liberty  
Mutual Insurance Co., Portsmouth, N.H.  
Master of science, computer science  
Boston University, May 1995  
Bachelor of science,  
business administration  
University of New Hampshire,  
December 1989

**B**rad, who teaches C and C++ programming, had to leave his previous employer because of a merger. Since he was in a highly technical environment, he wanted to expand on his business degree. Plus, he didn't have to leave the office. Liberty Mutual Insurance Co. in Portsmouth, N.H., offered him a chance to work from home and provide technical support to other employees in a private office at the company's training facility in Portsmouth.

"I think that every class I took directly helped me on the job," Board says. "One class—'Income, tax, stock and bonds,' a course I now teach for Lib-

"Before I went to college, I thought I understood how computing worked—and I did, to some degree," Board says. "But now I have a much deeper understanding of how things work. So when I'm working on some C++ code that was implemented and someone asks why it was done that way, I can really go all the way to the root of the problem and show the logic of the situation starts with the hardware works and take it from there."

# Regional Scope: Minneapolis/St. Paul

## Job fertility in the Twin Cities

*Minneapolis and St. Paul offer one of the most fruitful job markets for IS professionals* — By William Spain

**M**innesota's Twin Cities of Minneapolis and St. Paul just might be the nation's most urbanized icebox. But the area's booming and diversified economy is experiencing a dearth of information systems skills that could warm any job seeker's heart. In fact, the only thing skilled IS professionals might find a bit cold is the cash they will be offered to sign on with companies in the Twin Cities.

According to Rick DesLauriers, a technical recruiter at ESI Systems Professionals, virtually every segment of Minneapolis/St. Paul's diversified economy is suffering from the lack of IS talent.

"We have strong manufacturing, retail and medical technology," DesLauriers says, and all of them face a "big-time shortage" of skilled workers.

Among the most immediate needs are people with expertise in C++, PowerSoft Corp.'s PowerBuilder and Microsoft Corp.'s Visual Basic Access. In addition, "the mainframe world is still very strong — Cobol and DB2 — because all of the legacy systems" still in place, DesLauriers says.

Rex Carter, vice president and chief information officer at Carlson Co., a \$12 billion travel, hospitality and marketing services company, echoes that sentiment.

"It would probably be easier to identify the skills we aren't looking for," Carter says. "The market has been extraordinarily tight. The demand far exceeds the supply. We find ourselves using a lot of contracting companies and competing with them for qualified people."

Carlson is particularly in the market for people with strong Oracle skills, as well as [World Wide] Web site development and multimedia," Carter says. "From there, it blows out to advanced client/server, Visual Basic, C++ and advanced development. At the same time, we are still looking for people who understand Cobol [and] the old mainframes. We have a big base of legacy systems to update and connect."

An advertising agency Campbell Mithun East, "communications and networking skills are the big ones," says Charles L. Kamp, vice president and director of MIS. "We are looking for people with good networking backgrounds and a

real good background in communications software."

Kamps says his agency "has been fairly fortunate" in meeting its personnel needs. "I talk to other people, and I know there's a very real demand and we're definitely exceeding."

The key is the ability to develop electronic-mail packages and knowledge of the Internet, intranets and networking. "If you have strength in these skills, you will not have a difficult time getting a job in this area," he says.

One of the things driving the red-hot local economy is the perception that the Twin Cities retain a quality of life matched by few other unincorporated areas. The area has many of the arts, sports and entertainment options of larger cities, but no hellish commutes or overpriced housing. That kind of atmosphere may encourage new companies to come in to the market and those already there to stay. ■

Spain is a freelance writer in Chicago.



### Who's got the jobs

The top employers in Minneapolis and St. Paul:

EMPLOYER	NUMBER OF EMPLOYEES
Minneapolis	1,000+
St. Paul	1,000+

Source: Minneapolis/St. Paul City Business; The Business Journal

## Recruitment challenges rising

*National flour company finds it takes longer to fill IS jobs*

**A** classic American brand name, Pillsbury Co., provides a good overview of the type of skills needed to prosper in the Minneapolis/St. Paul area. In an interview, David Morse, manager of human resources for IS at the subsidiary of Grand Metropolitan PLC, talks about Pillsbury's employment situation.

CW: How does the local IS employment picture look?

MORSE: I see Minneapolis as being one of the tightest markets [for employees] in the nation for IS skills. It's the white-collar capital of the Midwest.

CW: Any specific skill sets you're looking for?

MORSE: We need people for SAP and Lotus Notes development, electronic data interchange, data warehousing and related applications development.

CW: Is technical proficiency the main basis for hire?

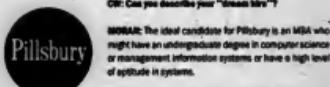
MORSE: We are starting to look for a much more well-rounded person. We are no longer looking for the programmer who can just sit in a cube and write code. We are moving to a team-based approach and need people who not only understand the systems but the business aspects.

CW: Can you describe your "dream job"?

MORSE: The ideal candidate for Pillsbury is an MBA who might have an undergraduate degree in computer science or management information systems or have a high level of expertise in systems.

CW: Overall, is Pillsbury meeting its IS staffing needs?

MORSE: Finding people in such a tight market isn't easy. We are generally meeting our needs, but the time frame it takes to find a qualified professional has lengthened. For instance, if we were to look for an EDI manager today, it would take at least two months to find the right, qualified person.







## Regional Scope: Minneapolis/St.Paul

# Healthcare

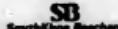
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# Marketplace

## Networks ready to take on new look

*Design tools will give administrators new views of their domains*

By Tom Duffy

**K**eeping track of the many components in client/server systems is a daunting task, even for the most well-organized network administrator. Distributed computing can translate into distributed purchasing, which means routers and servers can pop up anywhere, sometimes without the network administrator's knowledge.

An administrator of a small LAN might be able to carry around a mental picture of the network in his head. But administrators of large networks don't have that luxury. They need maps. Call it a necessary evil, but network mapping can facilitate troubleshooting, aid in the training of newly hired network specialists, and pave the way for carefully planned network expansion.

A few years ago, desktop network mapping products were relatively basic. Most network diagramming tools were simple graphics packages, not much different from presentation tools such as Microsoft Corp.'s PowerPoint. But the products have become far more powerful and now offer vast databases that allow detailed diagramming and "intelligent" features that prevent busy connections from being built into the map.

But the network diagramming market appears poised for a revolution. Coming soon are tools that allow "auto-discovery" — a network management function that seeks out, identifies and logs the network's components.

NetSolute Development in Wayland, Mass., plans to release by year's end a version of its NetSolute network design tool that will offer an autodiscovery function, says Brian

Burba, a senior analyst at International Data Corp. in Framingham, Mass. Meanwhile, Burba says, ImageNet Ltd., an Israeli-based company with offices in Wellesley, Mass., is working on an autodiscovery function to be incorporated in its Cane network engineering tool.

"Without autodiscovery, the value of network diagramming is limited," Burba says. "But once you get that, you can have this wonderful visual representation of your environment that you can plan off of and optimize. And you won't have to spend 80% of your time keeping it up to date."

But it may not be easy to develop tools that collect all data from multiple management systems. "Part of the problem is that the topology data is being gathered in a completely different format from management system to management system so there is no easy way to unify it into a single graphics program," says Tim Wilson, an analyst at Decnys, Inc., a consultancy in Sterling, Va.

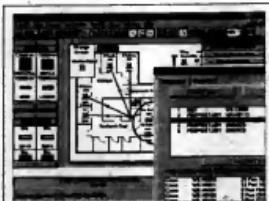
### Wide-ranging choices

Network diagramming tools offer a dizzying spectrum of capabilities. Prices can reach \$7,000 or so for Command from Cambium Networks, Inc. in Santa Clara, Calif. Command is provided as a network management package with diagnostic capability.

The relatively young network diagramming tools market is changing rapidly, and diagramming capability is increasingly an adjunct to other network management tools.

Optimal Networks Corp. in Mountain View, Calif., known for its network traffic monitoring products, is poised this month to release Optimal Surveyor, which can feed network information into a separate diagramming tool, in this case NetVis from Qwest Systems in Rockville, Md. Optimal officials say they hope to make Surveyor compatible with other diagramming tools.

All the developments are pushed by demand from network managers, Wilson says. "There is a great deal more emphasis being placed on network systems and application management," he says. "It's no longer just an issue of drawing



Autodiscovery of devices is on the way for products such as NetSolute



NetVis can map data collected by other management packages

ing a line from one router to another. You have to know the content of the individual systems involved and the applications running on the processor."

Systems integrators are a growing market for network diagramming tools, says John Morency, a principal at The Registry, Inc., a consultancy in Newton, Mass.

"The need to do this type of validation on an ongoing basis drops off sharply once the support staff has the expertise," he says. "But it makes a lot of sense in terms of being able to reuse the function across a lot of users." ■

Duffy is a freelance writer in Somerville, Mass.

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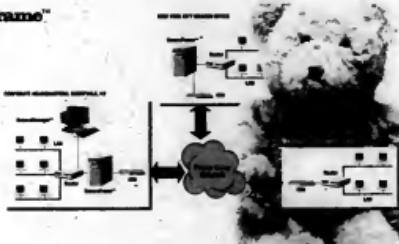
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Wang works its way back, 106

# Finance & Investing

Next week: Hunting for bargain-basement technology stocks

## Investor's Bookshelf

### Investor's Guide to the 'net: Making Money Online

By Paul B. Farrell (John Wiley & Sons, Inc., New York, 356 pages, \$24.95, paperback)

**T**his book doesn't deliver on the promise of its title. It is a collection of mostly published information about a wide variety of financial and investment information and services available via the Internet, online services and print and broadcast media. The book doesn't offer any guidance whatsoever; it neither points readers to the best sites nor advises them on what to do to make money. In fact, parts of the text seem to have been lifted directly from the company's accompanying certain company products and services. Particularly annoying are the boxed sidebars, which seemed designed merely to add to the page count of the book. Some are excerpts of old newspaper and magazine articles about the Internet and investing. Others are reprints from various sources, from service providers and publishers. An unforgivable oversight of this so-called guide is the lack of any sort of URL listing. The author doesn't even include phone numbers and addresses of the companies mentioned.

**The Red Herring Guide to the Digital Universe**  
By the editors of the Red Herring Magazine  
(Warner Books, New York, 196 pages: \$27.95, hardcover)

**T**his tome isn't exactly a guide, either, but it is a valuable resource and reference for anyone involved in the communications, computer and broadcast industries, new in the trough or emerging. The first three of

the book consists of 11 chapters on various technology segments, including the Internet. Each chapter is a general overview of the technology, geared more for the average investor than the technologically sophisticated. The rest of the book — 100 pages — is a collection of profiles of companies deemed to be the "shining stars of the digital universe." The companies were chosen based on their influence in the digital universe, management team, financial resources, market dominance and market potential. Each one-page profile lists the company's address, phone number, E-mail address, management, stock exchange and symbol and key financials, such as revenue and earnings per share. Also included are descriptions of the company's products and market strategy. As is true of any analog guide, some of the company profiles were outdated as soon as the book was published; already, several have changed hands by going public or being acquired. — Tim Harbert

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### COMMENTARY

# 'the NET EFFECT ON IPOs

Technology executives and investors are baffled. And perhaps rightly so.

By Mark H. Sherman

**H**ow can Internet-related companies launch such successful initial public offerings (IPOs) when they have limited or no operating history or revenue? Even more important, how should you evaluate such companies as investment opportunities?

The Internet/intranet business appears to have unlimited potential. Marshall Senk, our chief Internet research analyst, says Internet subscriptions will grow from 50 million in 1995 to more than 280 million by the year 2000. More significant, Senk sees the Internet as a money maker, estimating that Internet-related revenue will increase from \$3 billion in 1995 to at least \$40 billion by the year 2000.

Such potential has been sufficient to attract blocks of investors to anything Internet-related, and it has changed the ground rules for how and when these companies can go public. But with numerous Internet investment opportunities hitting the market every day, getting and investing in them becomes tricky.

In the past, investment bankers and investors alike could get an accurate indication of how successful a software IPO would be based on how well the company met established IPO criteria. The new practice has been to look at two factors: marketability and valuation. But the Internet puts a twist on how investors must consider these factors.

Predictability relates to the degree to which investors feel confident in a company's business model and its ability to meet performance goals. Historical measures of a company's predictability include significant market opportunity, strong competitive position, proven customer acceptance, strong strategic relationships, high-quality and experienced management and a proven financial model with four to five quarters of profitability.

But Internet companies are far less predictable. With the recent success of many early stage Internet IPOs, investors

have become more anxious to invest in companies at a more conceptual stage. The measures of predictability in this environment have been altered to include a core Internet-related technology, product or service with significant market opportunity; strategic relationships with businesses that will imbue the company with an "Internet-savvy" seal of approval; high-quality and experienced management; and significant Internet revenue anticipated by 1997.

Valuation methods have also changed for Internet-related companies. Typically in the software industry, companies that have market capitalizations greater than \$75 million and public stock in excess of \$25 million meet the minimum requirement for an institutional investment grade IPO.

While historically, most stocks have been priced based on projected price-to-earnings ratios, most Internet companies are being valued as a multiple of estimated cash-flow 1997 revenue, typically ranging from 7 times to 11 times and averaging around 9 times. This valuation methodology ignores Internet companies' operating histories, which often show little revenue, and enables the "average" Internet software company with revenue of less than \$10 million in 1996 and approximately \$25 million in 1997 to go public with a trading market capitalization of about \$200 million.

The new predictability and valuation parameters have worked for investors in the short term, but only time will tell whether they are accurate reflections of these companies' worth.



Sherman is a principal at Robertson Stephens & Co., an investment banking firm in San Francisco. He heads the company's Software Banking Group and can be reached at (415) 781-9700 or mark\_sherman@rsc.com.

## The Week in Stocks



## *Gainers*   *Losers*

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Platinum Software	14.2	Sunbeam Corp.	13.1
Breakthrough Technology	13.8	Starline Electronics	10.7
Braswell	13.6	Stearns Corp.	10.5
Brevis	13.3	SWPS Systems Inc.	7.1
Cadence Design Systems	13.2	Telxon Communications Tech	6.3
Camsoft	13.0	Protek Corp.	6.1
Computer Horizons	12.9	Robert Corp.	5.8
David Systems Resources	12.8	Comshare Corp.	5.6
Microsoft Corp.	9.7	Sabamini Corp.	5.6
Motorola Inc.	9.6	Siemens AG, U.S. Prod.	15.75
National Semiconductor	9.5	Silicon Chip Corp.	15.75
Network Associates	9.4	Conexant Communications	15.0
Novellus Systems	9.4	Siemens AG, U.S. Prod.	14.0
OptiMicrosystems Inc.	9.3	Teletron Corp.	8.75
Perceptual Computing	9.2		
Quantum Computer Corp.	9.1	AT&T	5.35

Industry Almanac

Wang redux

Formerly one of the hardware titans in the Boston area, Wang Laboratories, Inc. [Nasdaq:WANG] has emerged from a long, hard fall to become a more focused software and information company.

"There's a lot of value hidden in this company," says Tom Browne, vice president at Prudential Securities Research in New York. Browne recommends a buy. The stock could hit \$30 within 12 to 18 months, he says. Wang's \$1 billion in revenue comes from its network integration, workflow and imaging software, and the maintenance and support of its VS systems hardware and software. The firm's continued success depends on how well it can grow business in the first two areas and manage the decline in its VS business, analysts say.

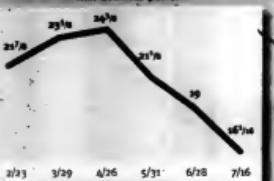
Wang is trying to grow its network integration business internally and through acquisitions, Browne says. The firm also wants to continue the growth of its workflow and imaging software business, which increased more than 100% in the past three quarters and now stands at \$45 million to \$50 million.

That growth is partly due to Wang's partnership with Microsoft Corp. (Nasdaq:MSFT), which last year bought 10% of Wang and started to incorporate its viewer technology into Windows 95 and Windows NT Business users.

Wang's business is declining at a rate of 22% a year and is being well-managed by the firm, says Patrick Mason, a research analyst at Volpe, Welty & Co. in San Francisco. But an acceleration in that rate of decline could be trouble because the VS segment still brings in significant revenue. — Tom Hartert

It's all relative.

Even with its recent dive, Wang has weathered the battering of technology stocks fairly well, compared with other companies.



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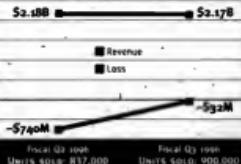
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## One quarter at a time

**CIO** Gilbert Amelio's bold moves at Apple Inc. mean the months have helped Apple move toward recovery.



## Apple sees lighter shade of red

**CEO Amelio's moves credited with stabilizing slide, easing user fears**

By Lisa Fiscarelli

Apple Computer, Inc.'s financial fiasco may be winding down. Despite posting a \$32 million loss for its third fiscal quarter, users and analysts seem pleased with the Cupertino, Calif., company's efforts to reverse its financial slide.

The loss for the quarter, which ended June 28, is a drop in the bucket compared with the staggering \$760 million loss the firm posted in the previous quarter, observers say.

Wall Street had expected Apple to lose upwards of \$100 million for the quarter. Apple's sales, although 16% below figures for the same period last year, hovered around \$2.16 billion — the same point as the prior quarter.

### Man with the plan

To restore Apple to profitability by the first half of next year, Apple Chairman and CEO Gilbert F. Amelio has taken some bold steps in the past six months. These include refocusing on the Internet, reducing the number of models in the product line, reorganizing the business units, selling off expensive manufacturing plants and handing out more than 1,800 pink slips. Although

the moves haven't entirely stanchéd the financial bleeding, it has slowed down since last quarter, which was Apple's worst ever.

"I can sleep at night knowing it's OK to buy more Macs," said David Pensak, senior research fellow and principle consultant for Advanced Computing Technology at DuPont Co., Wilmington, Del.

"I'm pleased with what Amelio is trying to do. It's like pulling a band-aid off your arm. You can't do it slowly. You have to yank it off. Amelio did that last quarter, and the wound is healing."

Some financial analysts are also regaining faith in Apple.

"It's not hard to be a \$9 billion company and be profitable. All you need to do is walk and chew gum at the same time, and I think Apple can do that," said David Wu, an analyst at The Chicago Corp., a New York investment firm.

But others weren't as impressed. "While management seems to be doing a much better job of managing the business than has historically been the case, there was nothing in the results to suggest that longer-term things are looking up," said Kurt Lang, an analyst at Montgomery Securities in San Francisco.



**CEO Gilbert F. Amelio**  
Apple kept Apple afloat, stars say

## NT 4.0

CONTINUED FROM PAGE 1

of NetWare, code-named Green River. That product is set to ship in September.

Lending credence to this theory was Microsoft's decision to ship a second postbeta version only one to two weeks after it sent out the initial release to 200 sites.

**Uncommonly quiet**  
Bob Milner, professional services technical support at Syntex Inc., a Microsoft and Novell platinum reseller, said Microsoft typically takes from 45 to 60 days between prerelease shipments. "Microsoft engineers can't possibly have responded to or fixed the bugs everyone reported," he said.

But Nash said Microsoft has put out Release Candidates this quickly before, and engineers are working daily to "fix any fires" before NT 4.0 ships. "Many of the issues, such as the lack of documentation [for some technical issues], have already been corrected," he said.

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ed," he said. That doesn't assuage everyone's fears. Some users said they will delay deployment.

"We won't install NT Server 4.0 in a production environment until at least the first quarter [next year], after the first service pack has shipped," said Bob Lee, senior manager at Charles Schwab & Co., a discount brokerage in San Francisco.

Lee said he believes NT 4.0 is a "quality product. But he said the brokerage will play it safe.

Despite the criticisms, all the users said they were generally

pleased with the level of functionality in the forthcoming Windows NT 4.0 and praised the inclusion of the Windows 95 user interface.

Joe Olsik, an analyst at Ferster Research Inc., said Microsoft is eager to ship NT 4.0 so it can shift its focus to the Internet.

"The bottom line is that the pressure is on Microsoft to address other issues — especially the Internet — and compete with Netscape," Olsik said.

**& Q/A Warp Server gets the thumbs-up. See page 60.**

### Among the flaws found in Windows NT 4.0 beta:

- Disparate naming schemes in dial-up boxes. Some have new Dial-up Networking; others have Remote Access Services.
- Inability of the automated install feature to prebuild scripts.
- Error messages that cause basic administration tools to crash.
- Security Access Module, which houses all user security accounts, experiences time outs. This lengthens the log-in process.
- Problems installing Exchange Server.
- Memory violation errors during installation of the graphical user interface, which have necessitated a hard reboot.

## Web sites

CONTINUED FROM PAGE 1

selves simply by having a site on the Web, said Judith Hurwitz, president of Hurwitz Group, Inc. in Newton, Mass. The push today is toward enhancing those sites with interactive features more interesting to keep users coming back. "It's one thing to have technology available for people to play with but another thing for the technology to have a purpose and to do something real concrete," she said.

### On tap

Among the enhancements for users are the following:

• Pumped-up pages could mean more money for firms that do business online.

Retailers, for instance, could track buyers' shopping habits and offer them information on retail items related to their interests when they log on to the store's site.

• In this medium, a wait of 20 seconds for a page to download often has most Web cruisers heading for another site, one developer said. Components slash wait-time and help retain antsy readers by offering information on the same page instead of requiring addi-

tional pages to be downloaded, the developer said.

• Animated ads are expected to attract more attention than static logos.

Patrick Connolly, a developer at InvestorsEdge, an online financial services provider in Mill Valley, Calif., is one of many observers who predict consumers will significantly change the way the Web looks and the way people interact with it. "The difference will be night and day," he said.

Components are already helping Web pages that used to sport flat text, logos and hyperlinks turn up with drill-down database capabilities, user recognition and live information feeds.

"We have a screen that refers to an event in Africa Great Migration," said Greg Huldy, vice president of marketing and sales at Alpenglow, Inc., a CD-ROM and Internet publisher in Woodside, Wash.

"As you move your cursor over a series of thumbnail images, a larger image appears. You don't have to click. You don't have to leave this page for somewhere else, go through a download and whatever else," he explained.

Developers today can add such

features to Web pages without the help of components, but writing the necessary code is generally too expensive to justify.

With components such as Microsoft's Corp's ActiveX controls, JavaSoft's Java applets and IBM's awaited OpenDoc technology, developers are creating features such as the following:

• Three-dimensional images that rotate to give visitors a 360-degree view. Black Diamond Consulting, Inc. in Portsmouth, N.H., has created a component that real estate agents, for instance, could use to give potential home buyers a complete cyberspace of a house's living room or neighborhood.

• Sites that scroll, live information feeds. InvestorsEdge has switched from flat pages with a black background, a logo and hyperlinks to pages that ascertain who you are when you hit the site. Using that information, InvestorsEdge can scroll a live ticker of your stock portfolio across the top of the page while an ad scrolls across the bottom.

Some developers said they want to make sure the technology has a real business benefit.

Rob Reever, senior software developer at Virtual Vineyard, a Web-based wine and gourmet food retailer, said he is careful to avoid glitz and glitter that doesn't offer information. "You want to make things as easy as you can and as fast as you can... We don't want to have people wait to [buy] something," he said.

# Primary colors

Federal Election Commission data shows that many high-tech executives supported Phil Gramm, Lamar Alexander, Steve Forbes and Pete Wilson before those candidates lost the GOP presidential primary race to Bob Dole. Sylvan chairman Mark Hoffman backed Gramm in 1995, but when Gramm dropped out, Hoffman switched to Dole in 1996. Some contributions reflected a home-state bias. For example, the Texas-based executives from Electronic Data Systems and Compaq supported Gramm, a U.S. senator from Texas.

—Mick Bettis

## 1995 to 1996 contribution

Phil Gramm	Pete Wilson
Gary J. Fernandes (EDS)	\$4,000
Lester M. Alberthal Jr. (EDS)	\$2,000
Mark B. Hoffman (Sylvan)	\$1,000
Erichard Platner (Compaq)	\$1,000
T. J. Rodgers (Cypress Semiconductor)	\$1,000
<b>Steve Forbes</b>	
Scott G. McNealy (Sun)	\$1,000
Charles B. Wang (Computer Associates)	\$1,000
<b>Lamar Alexander</b>	
Edward R. McCracken (Silicon Graphics)	\$1,000
James L. Barksdale (Netscape)	\$500

Brid. Quip
Craig K. Benson (Cobitron)
S. Robert Levine (Comerco)
Lawrence J. Ellison (Oracle)
Mark B. Hoffman (Sylvan)

Source: FEC (www.fec.gov/contributions)

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You can take an educational tour of Stonehenge, England's mysterious prehistoric monument, without ever leaving your chair. Users can visit a virtual reality model of Stonehenge at Intel's World Wide Web site ([www.intel.com](http://www.intel.com)). Intel's goal is to show off its 166-MHz Pentium Pro processor, but the real wonder is how — and why — the stones were shaped, moved and erected about 4,000 years ago.



## One size fits all



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## Inside Lines

### No doubt sorry he asked...

"During yesterday's hearing on information warfare, you asked a rather indecent question: 'What does *cyber* mean, anyway?'" reads a recent letter from CIA Director John Deutch to Sen. Sam Nunn (D-Ga.). Spymaster Deutch then went on to outline somewhat conflicting answers to the question, based on research by the CIA, the State Department and the Defense Department. According to one theory, "cyber" comes from the Greek word "cybernetes," or "driver," from which we also get the word "cybernet," a genus of large driving beetles. "I hope this clears up any confusion," Deutch's letter concludes.

### Netscape bug bites again

Internet creator The National Science Foundation (NSF) warns that people who access its site with Netscape 2.x browsers will get a security error. An NSF spokeswoman said the bug occurs every six months because that's when the foundation changes the certificate on its Netscape Commerce Server. Netscape browsers cache information from the previous certificate, which clashes with new certificate information and prompts the error. Users need to clear their cache to avoid the problem, the NSF spokeswoman said. Netscape has taken care of the problem with new versions of its browser.

### Sun revs Ultra line

Sun Microsystems this week will add a 200-MHz machine to its UltraSPARC-based Ultra 1 line. Sun still will be "noticeably behind" vendors such as Digital Equipment and Hewlett-Packard on performance, one analyst said. But its pricing should be compelling enough to keep customers happy, the analyst said. Pricing for the new machine is expected to start somewhere under \$20,000.

### On a mission from Temple, Texas

Texas Instruments executives hit the road last week to perform damage control after some recent reports that the notebook vendor was delivering somewhat buggy laptops and providing below-par support and service. The message from officials at the Dallas company is that service is being improved, manufacturing is being streamlined, and the company is keeping a closer eye on OEM partners.

### Gates has left the building

Bill Gates' name is turning up on user conference agendas with the kind of regularity that one might associate with Wayne Newton and Las Vegas magicians. The Microsoft chairman will share the stage in Philadelphia with SAP AG founder Hasso Plattner at SAP's North American Supplier users conference there July 24-25. From there, Gates will go to New Orleans, where he's headlining — along with retired U.S. Gen. Colin Powell — at Computer Associates International's CA World users conference. The CA conference is being held that same week.

Ah, to be young again and, perchance, a Web page designer. The HP 3000 users' forum on the Internet last week carried lyrics for a parody of the Dire Straits song, "Money for Nothing." Called "Home Page for Nothing," it starts like this:

Now look at them yo-yos, that's the way you do it,  
You write the code that runs the Web TV.

That ain't workin', that's the way you do it,  
Get yer home page for nuthin' and your hits for free.

Now that ain't workin', that's the way you do it,  
Learn me tell ya, them guys can code.

Maybe get some hockin' fore they even have a product,  
Major in a month they'll IPO.

If you have a song parody or news tip to share, sing out to news editor Patricia Krebs at (508) 820-8183 or via E-mail at [patricia\\_krebs@rcn.com](mailto:patricia_krebs@rcn.com).

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